ACZ Laboratories, Inc.
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Analytical Report

July 16, 2021

Report to:
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Hudbay Minerals
5255 E Williams Circle
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cc: David Krizek

Bill to:
Lionelyn Garcia
Hudbay Minerals
5255 E Williams Circle
Suite W1065
Tucson, AZ 85711

Project ID:
ACZ Project ID: L66694

Holly Beggy:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 23, 2021. This project has been assigned to ACZ's project number, L66694. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L66694. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 15, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hudbay Minerals
Project ID:
Sample ID: D4A-S1

ACZ Sample ID: ***L66694-01***
Date Sampled: *06/03/21 07:26*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 12:23	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 8:57	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	2.22			mg/L	0.05	0.25	07/02/21 16:19	jlw
Aluminum, total (3050)	M6010D ICP	100	8210		*	mg/Kg	5	25	07/13/21 1:26	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 13:58	bsu
Antimony, total (3050)	M6020B ICP-MS	500	1.29		*	mg/Kg	0.2	1	07/14/21 17:54	bsu
Arsenic (1312)	M6020B ICP-MS	1	<0.0002	U	*	mg/L	0.0002	0.001	07/01/21 13:58	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	10.2			mg/Kg	0.1	0.5	07/14/21 17:54	bsu
Cadmium (1312)	M6020B ICP-MS	1	0.00199			mg/L	0.00005	0.00025	07/01/21 13:58	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.409			mg/Kg	0.025	0.125	07/14/21 17:54	bsu
Calcium (1312)	M6010D ICP	1	67.0			mg/L	0.1	0.5	07/02/21 16:19	jlw
Calcium, total (3050)	M6010D ICP	100	23700			mg/Kg	10	50	07/13/21 1:26	jlw
Copper (1312)	M6020B ICP-MS	10	4.09			mg/L	0.008	0.02	07/01/21 16:34	bsu
Copper, total (3050)	M6020B ICP-MS	10000	3120		*	mg/Kg	8	20	07/15/21 12:32	bsu
Iron (1312)	M6010D ICP	1	1.13		*	mg/L	0.06	0.15	07/02/21 16:19	jlw
Iron, total (3050)	M6010D ICP	500	120000		*	mg/Kg	30	75	07/14/21 10:28	jlw
Lead (1312)	M6020B ICP-MS	1	0.00306			mg/L	0.0001	0.0005	07/01/21 13:58	bsu
Lead, total (3050)	M6020B ICP-MS	500	30.5		*	mg/Kg	0.05	0.25	07/14/21 17:54	bsu
Magnesium (1312)	M6010D ICP	1	4.74			mg/L	0.2	1	07/02/21 16:19	jlw
Magnesium, total (3050)	M6010D ICP	100	1910			mg/Kg	20	100	07/13/21 1:26	jlw
Manganese (1312)	M6010D ICP	1	1.28			mg/L	0.01	0.05	07/02/21 16:19	jlw
Manganese, total (3050)	M6010D ICP	100	819		*	mg/Kg	1	5	07/13/21 1:26	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:04	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	39.5		*	ng/g	2.21	11.05	06/28/21 17:14	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 16:19	jlw
Molybdenum, total (3050)	M6010D ICP	100	91.7		*	mg/Kg	2	10	07/13/21 1:26	jlw
Nickel (1312)	M6020B ICP-MS	1	0.0126			mg/L	0.0004	0.001	07/01/21 13:58	bsu
Nickel, total (3050)	M6020B ICP-MS	500	6.76			mg/Kg	0.2	0.5	07/14/21 17:54	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00105		*	mg/L	0.0001	0.00025	07/01/21 13:58	bsu
Selenium, total (3050)	M6020B ICP-MS	500	5.62		*	mg/Kg	0.05	0.125	07/14/21 17:54	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 13:58	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.190	B		mg/Kg	0.05	0.25	07/14/21 17:54	bsu
Zinc (1312)	M6010D ICP	1	0.317			mg/L	0.02	0.05	07/02/21 16:19	jlw
Zinc, total (3050)	M6010D ICP	100	116		*	mg/Kg	2	5	07/13/21 1:26	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-S1

ACZ Sample ID: ***L66694-01***
Date Sampled: *06/03/21 07:26*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	07/12/21 8:15	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	07/12/21 8:15	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/12/21 8:15	jpb
Conductivity @25C	SM2510B									
Conductivity		1	2.59		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	3.1		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.3		*	%	0.1	0.5	06/25/21 14:02	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	1.93		*	%	0.01	0.1	07/12/21 8:12	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:00	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 8:42	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 8:42	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:01	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:00	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:00	jpb
Synthetic Precip. Leaching Procedure	M1312								06/28/21 20:18	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-S2

ACZ Sample ID: ***L66694-02***
Date Sampled: *06/03/21 07:05*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 12:48	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 9:34	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	9.97			mg/L	0.05	0.25	07/02/21 16:23	jlw
Aluminum, total (3050)	M6010D ICP	102	11100		*	mg/Kg	5.1	25.5	07/13/21 1:38	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:00	bsu
Antimony, total (3050)	M6020B ICP-MS	510	0.542	B	*	mg/Kg	0.204	1.02	07/14/21 17:56	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00041	B	*	mg/L	0.0002	0.001	07/01/21 14:00	bsu
Arsenic, total (3050)	M6020B ICP-MS	510	8.61			mg/Kg	0.102	0.51	07/14/21 17:56	bsu
Cadmium (1312)	M6020B ICP-MS	1	0.0189			mg/L	0.00005	0.00025	07/01/21 14:00	bsu
Cadmium, total (3050)	M6020B ICP-MS	510	1.17			mg/Kg	0.0255	0.128	07/14/21 17:56	bsu
Calcium (1312)	M6010D ICP	1	390			mg/L	0.1	0.5	07/02/21 16:23	jlw
Calcium, total (3050)	M6010D ICP	102	36800			mg/Kg	10.2	51	07/13/21 1:38	jlw
Copper (1312)	M6020B ICP-MS	100	29.3			mg/L	0.08	0.2	07/01/21 16:36	bsu
Copper, total (3050)	M6020B ICP-MS	10200	3670		*	mg/Kg	8.16	20.4	07/15/21 12:34	bsu
Iron (1312)	M6010D ICP	1	1.65		*	mg/L	0.06	0.15	07/02/21 16:23	jlw
Iron, total (3050)	M6010D ICP	510	156000		*	mg/Kg	30.6	76.5	07/14/21 10:39	jlw
Lead (1312)	M6020B ICP-MS	1	0.00466			mg/L	0.0001	0.0005	07/01/21 14:00	bsu
Lead, total (3050)	M6020B ICP-MS	510	49.7		*	mg/Kg	0.051	0.255	07/14/21 17:56	bsu
Magnesium (1312)	M6010D ICP	1	18.4			mg/L	0.2	1	07/02/21 16:23	jlw
Magnesium, total (3050)	M6010D ICP	102	4540			mg/Kg	20.4	102	07/13/21 1:38	jlw
Manganese (1312)	M6010D ICP	1	3.57			mg/L	0.01	0.05	07/02/21 16:23	jlw
Manganese, total (3050)	M6010D ICP	102	1210		*	mg/Kg	1.02	5.1	07/13/21 1:38	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:05	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	96.7		*	ng/g	2.18	10.9	06/28/21 17:23	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 16:23	jlw
Molybdenum, total (3050)	M6010D ICP	102	91.5		*	mg/Kg	2.04	10.2	07/13/21 1:38	jlw
Nickel (1312)	M6020B ICP-MS	1	0.0148			mg/L	0.0004	0.001	07/01/21 14:00	bsu
Nickel, total (3050)	M6020B ICP-MS	510	7.44			mg/Kg	0.204	0.51	07/14/21 17:56	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00685		*	mg/L	0.0001	0.00025	07/01/21 14:00	bsu
Selenium, total (3050)	M6020B ICP-MS	510	9.87		*	mg/Kg	0.051	0.128	07/14/21 17:56	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:00	bsu
Thallium, total (3050)	M6020B ICP-MS	510	0.191	B		mg/Kg	0.051	0.255	07/14/21 17:56	bsu
Zinc (1312)	M6010D ICP	1	2.24			mg/L	0.02	0.05	07/02/21 16:23	jlw
Zinc, total (3050)	M6010D ICP	102	258		*	mg/Kg	2.04	5.1	07/13/21 1:38	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-S2

ACZ Sample ID: ***L66694-02***
Date Sampled: *06/03/21 07:05*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 8:31	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	07/12/21 8:31	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 8:31	jpb
Conductivity @25C	SM2510B									
Conductivity		1	4.63		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	3.1		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	98.2		*	%	0.1	0.5	06/25/21 16:47	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	4.45		*	%	0.01	0.1	07/12/21 8:30	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:03	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 9:39	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 9:39	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:02	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:04	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:04	jpb
Synthetic Precip. Leaching Procedure	M1312								06/28/21 21:20	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-1

ACZ Sample ID: ***L66694-03***
Date Sampled: *06/02/21 13:55*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 13:37	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 10:47	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	<0.05	U		mg/L	0.05	0.25	07/02/21 16:31	jlw
Aluminum, total (3050)	M6010D ICP	100	7420		*	mg/Kg	5	25	07/13/21 1:42	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:03	bsu
Antimony, total (3050)	M6020B ICP-MS	500	1.05		*	mg/Kg	0.2	1	07/14/21 17:57	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00031	B	*	mg/L	0.0002	0.001	07/01/21 14:03	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	7.75			mg/Kg	0.1	0.5	07/14/21 17:57	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	07/01/21 14:03	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	1.45			mg/Kg	0.025	0.125	07/14/21 17:57	bsu
Calcium (1312)	M6010D ICP	1	18.9			mg/L	0.1	0.5	07/02/21 16:31	jlw
Calcium, total (3050)	M6010D ICP	200	62000			mg/Kg	20	100	07/14/21 10:43	jlw
Copper (1312)	M6020B ICP-MS	1	0.0446			mg/L	0.0008	0.002	07/01/21 16:39	bsu
Copper, total (3050)	M6020B ICP-MS	10000	2810		*	mg/Kg	8	20	07/15/21 12:36	bsu
Iron (1312)	M6010D ICP	1	0.135	B	*	mg/L	0.06	0.15	07/02/21 16:31	jlw
Iron, total (3050)	M6010D ICP	100	49800		*	mg/Kg	6	15	07/13/21 1:42	jlw
Lead (1312)	M6020B ICP-MS	1	0.00027	B		mg/L	0.0001	0.0005	07/01/21 14:03	bsu
Lead, total (3050)	M6020B ICP-MS	500	80.9		*	mg/Kg	0.05	0.25	07/14/21 17:57	bsu
Magnesium (1312)	M6010D ICP	1	0.37	B		mg/L	0.2	1	07/02/21 16:31	jlw
Magnesium, total (3050)	M6010D ICP	100	3180			mg/Kg	20	100	07/13/21 1:42	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U		mg/L	0.01	0.05	07/02/21 16:31	jlw
Manganese, total (3050)	M6010D ICP	100	1200		*	mg/Kg	1	5	07/13/21 1:42	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:06	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	17.9		*	ng/g	1.95	9.75	06/28/21 17:31	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 16:31	jlw
Molybdenum, total (3050)	M6010D ICP	100	150		*	mg/Kg	2	10	07/13/21 1:42	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U		mg/L	0.0004	0.001	07/01/21 14:03	bsu
Nickel, total (3050)	M6020B ICP-MS	500	7.27			mg/Kg	0.2	0.5	07/14/21 17:57	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00116		*	mg/L	0.0001	0.00025	07/01/21 14:03	bsu
Selenium, total (3050)	M6020B ICP-MS	500	4.67		*	mg/Kg	0.05	0.125	07/14/21 17:57	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:03	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.143	B		mg/Kg	0.05	0.25	07/14/21 17:57	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U		mg/L	0.02	0.05	07/02/21 16:31	jlw
Zinc, total (3050)	M6010D ICP	100	322		*	mg/Kg	2	5	07/13/21 1:42	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-1

ACZ Sample ID: ***L66694-03***
Date Sampled: *06/02/21 13:55*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/12/21 8:39	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.1	B	*	%	0.1	0.5	07/12/21 8:39	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 8:39	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.314		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.3		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.2		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.5		*	%	0.1	0.5	06/25/21 18:10	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.67		*	%	0.01	0.1	07/12/21 8:36	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:07	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 9:58	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 9:58	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:03	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:09	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:09	jpb
Synthetic Precip. Leaching Procedure	M1312								06/28/21 23:26	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-2

ACZ Sample ID: ***L66694-04***
Date Sampled: *06/02/21 13:25*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 14:52	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 11:23	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.177	B		mg/L	0.05	0.25	07/02/21 16:43	jlw
Aluminum, total (3050)	M6010D ICP	101	7380		*	mg/Kg	5.05	25.3	07/13/21 1:46	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:05	bsu
Antimony, total (3050)	M6020B ICP-MS	505	1.70		*	mg/Kg	0.202	1.01	07/14/21 17:59	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00063	B	*	mg/L	0.0002	0.001	07/01/21 14:05	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	9.34			mg/Kg	0.101	0.505	07/14/21 17:59	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	07/01/21 14:05	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.895			mg/Kg	0.0253	0.126	07/14/21 17:59	bsu
Calcium (1312)	M6010D ICP	1	14.6			mg/L	0.1	0.5	07/02/21 16:43	jlw
Calcium, total (3050)	M6010D ICP	202	60600			mg/Kg	20.2	101	07/14/21 10:47	jlw
Copper (1312)	M6020B ICP-MS	1	0.0894			mg/L	0.0008	0.002	07/01/21 14:05	bsu
Copper, total (3050)	M6020B ICP-MS	10100	2870		*	mg/Kg	8.08	20.2	07/15/21 12:38	bsu
Iron (1312)	M6010D ICP	1	0.446		*	mg/L	0.06	0.15	07/02/21 16:43	jlw
Iron, total (3050)	M6010D ICP	202	61100		*	mg/Kg	12.1	30.3	07/14/21 10:47	jlw
Lead (1312)	M6020B ICP-MS	1	0.00083			mg/L	0.0001	0.0005	07/01/21 14:05	bsu
Lead, total (3050)	M6020B ICP-MS	505	19.5		*	mg/Kg	0.0505	0.253	07/14/21 17:59	bsu
Magnesium (1312)	M6010D ICP	1	0.46	B		mg/L	0.2	1	07/02/21 16:43	jlw
Magnesium, total (3050)	M6010D ICP	101	2740			mg/Kg	20.2	101	07/13/21 1:46	jlw
Manganese (1312)	M6010D ICP	1	0.022	B		mg/L	0.01	0.05	07/02/21 16:43	jlw
Manganese, total (3050)	M6010D ICP	101	1300		*	mg/Kg	1.01	5.05	07/13/21 1:46	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:11	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	15.9		*	ng/g	1.84	9.2	06/28/21 17:40	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 16:43	jlw
Molybdenum, total (3050)	M6010D ICP	101	83.2		*	mg/Kg	2.02	10.1	07/13/21 1:46	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U		mg/L	0.0004	0.001	07/01/21 14:05	bsu
Nickel, total (3050)	M6020B ICP-MS	505	7.71			mg/Kg	0.202	0.505	07/14/21 17:59	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00123		*	mg/L	0.0001	0.00025	07/01/21 14:05	bsu
Selenium, total (3050)	M6020B ICP-MS	505	3.60		*	mg/Kg	0.0505	0.126	07/14/21 17:59	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:05	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.105	B		mg/Kg	0.0505	0.253	07/14/21 17:59	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U		mg/L	0.02	0.05	07/02/21 16:43	jlw
Zinc, total (3050)	M6010D ICP	101	166		*	mg/Kg	2.02	5.05	07/13/21 1:46	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-2

ACZ Sample ID: ***L66694-04***
Date Sampled: *06/02/21 13:25*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	07/12/21 8:47	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	07/12/21 8:47	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/12/21 8:47	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.442		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.3		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.7		*	%	0.1	0.5	06/25/21 19:32	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.83		*	%	0.01	0.1	07/12/21 8:42	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:11	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 10:17	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 10:17	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:04	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:14	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:14	jpb
Synthetic Precip. Leaching Procedure	M1312								06/29/21 2:34	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-3

ACZ Sample ID: ***L66694-05***
Date Sampled: *06/02/21 12:49*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 15:17	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 13:12	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.235	B		mg/L	0.05	0.25	07/02/21 16:47	jlw
Aluminum, total (3050)	M6010D ICP	101	8260		*	mg/Kg	5.05	25.3	07/13/21 2:02	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:16	bsu
Antimony, total (3050)	M6020B ICP-MS	505	1.04		*	mg/Kg	0.202	1.01	07/14/21 18:07	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00066	B	*	mg/L	0.0002	0.001	07/01/21 14:16	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	7.03			mg/Kg	0.101	0.505	07/14/21 18:07	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	07/01/21 14:16	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	1.49			mg/Kg	0.0253	0.126	07/14/21 18:07	bsu
Calcium (1312)	M6010D ICP	1	12.0			mg/L	0.1	0.5	07/02/21 16:47	jlw
Calcium, total (3050)	M6010D ICP	202	73900			mg/Kg	20.2	101	07/14/21 10:51	jlw
Copper (1312)	M6020B ICP-MS	1	0.0704			mg/L	0.0008	0.002	07/01/21 14:16	bsu
Copper, total (3050)	M6020B ICP-MS	10100	2410		*	mg/Kg	8.08	20.2	07/15/21 12:45	bsu
Iron (1312)	M6010D ICP	1	0.432		*	mg/L	0.06	0.15	07/02/21 16:47	jlw
Iron, total (3050)	M6010D ICP	101	46100		*	mg/Kg	6.06	15.2	07/13/21 2:02	jlw
Lead (1312)	M6020B ICP-MS	1	0.00074			mg/L	0.0001	0.0005	07/01/21 14:16	bsu
Lead, total (3050)	M6020B ICP-MS	505	61.6		*	mg/Kg	0.0505	0.253	07/14/21 18:07	bsu
Magnesium (1312)	M6010D ICP	1	<0.2	U		mg/L	0.2	1	07/02/21 16:47	jlw
Magnesium, total (3050)	M6010D ICP	101	3460			mg/Kg	20.2	101	07/13/21 2:02	jlw
Manganese (1312)	M6010D ICP	1	0.017	B		mg/L	0.01	0.05	07/02/21 16:47	jlw
Manganese, total (3050)	M6010D ICP	101	1510		*	mg/Kg	1.01	5.05	07/13/21 2:02	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:12	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	10.2		*	ng/g	1.6	8	06/28/21 17:49	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 16:47	jlw
Molybdenum, total (3050)	M6010D ICP	101	45.2		*	mg/Kg	2.02	10.1	07/13/21 2:02	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U		mg/L	0.0004	0.001	07/01/21 14:16	bsu
Nickel, total (3050)	M6020B ICP-MS	505	8.65			mg/Kg	0.202	0.505	07/14/21 18:07	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00178		*	mg/L	0.0001	0.00025	07/01/21 14:16	bsu
Selenium, total (3050)	M6020B ICP-MS	505	2.83		*	mg/Kg	0.0505	0.126	07/14/21 18:07	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:16	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.126	B		mg/Kg	0.0505	0.253	07/14/21 18:07	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U		mg/L	0.02	0.05	07/02/21 16:47	jlw
Zinc, total (3050)	M6010D ICP	101	263		*	mg/Kg	2.02	5.05	07/13/21 2:02	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-3

ACZ Sample ID: ***L66694-05***
Date Sampled: *06/02/21 12:49*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	07/12/21 8:55	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	07/12/21 8:55	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/12/21 8:55	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.187		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.3		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.5		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.7		*	%	0.1	0.5	06/25/21 20:55	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.59		*	%	0.01	0.1	07/12/21 8:48	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:15	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 10:36	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 10:36	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:06	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:18	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:18	jpb
Synthetic Precip. Leaching Procedure	M1312								06/29/21 6:44	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-4

ACZ Sample ID: ***L66694-06***
Date Sampled: *06/02/21 12:12*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 15:41	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 13:49	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.165	B		mg/L	0.05	0.25	07/02/21 16:58	jlw
Aluminum, total (3050)	M6010D ICP	100	7430		*	mg/Kg	5	25	07/13/21 2:06	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:18	bsu
Antimony, total (3050)	M6020B ICP-MS	500	1.08		*	mg/Kg	0.2	1	07/14/21 18:08	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00065	B	*	mg/L	0.0002	0.001	07/01/21 14:18	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	8.48			mg/Kg	0.1	0.5	07/14/21 18:08	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	07/01/21 14:18	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.994			mg/Kg	0.025	0.125	07/14/21 18:08	bsu
Calcium (1312)	M6010D ICP	1	14.2			mg/L	0.1	0.5	07/02/21 16:58	jlw
Calcium, total (3050)	M6010D ICP	200	83500			mg/Kg	20	100	07/14/21 11:07	jlw
Copper (1312)	M6020B ICP-MS	1	0.0816			mg/L	0.0008	0.002	07/01/21 14:18	bsu
Copper, total (3050)	M6020B ICP-MS	10000	2650		*	mg/Kg	8	20	07/15/21 12:47	bsu
Iron (1312)	M6010D ICP	1	0.372		*	mg/L	0.06	0.15	07/02/21 16:58	jlw
Iron, total (3050)	M6010D ICP	100	39900		*	mg/Kg	6	15	07/13/21 2:06	jlw
Lead (1312)	M6020B ICP-MS	1	0.00078			mg/L	0.0001	0.0005	07/01/21 14:18	bsu
Lead, total (3050)	M6020B ICP-MS	500	18.2		*	mg/Kg	0.05	0.25	07/14/21 18:08	bsu
Magnesium (1312)	M6010D ICP	1	0.35	B		mg/L	0.2	1	07/02/21 16:58	jlw
Magnesium, total (3050)	M6010D ICP	100	3550			mg/Kg	20	100	07/13/21 2:06	jlw
Manganese (1312)	M6010D ICP	1	0.016	B		mg/L	0.01	0.05	07/02/21 16:58	jlw
Manganese, total (3050)	M6010D ICP	100	1090		*	mg/Kg	1	5	07/13/21 2:06	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:13	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	18.4		*	ng/g	1.55	7.75	06/28/21 17:59	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 16:58	jlw
Molybdenum, total (3050)	M6010D ICP	100	66.5		*	mg/Kg	2	10	07/13/21 2:06	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00044	B		mg/L	0.0004	0.001	07/01/21 14:18	bsu
Nickel, total (3050)	M6020B ICP-MS	500	6.74			mg/Kg	0.2	0.5	07/14/21 18:08	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00201		*	mg/L	0.0001	0.00025	07/01/21 14:18	bsu
Selenium, total (3050)	M6020B ICP-MS	500	2.47		*	mg/Kg	0.05	0.125	07/14/21 18:08	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:18	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.149	B		mg/Kg	0.05	0.25	07/14/21 18:08	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U		mg/L	0.02	0.05	07/02/21 16:58	jlw
Zinc, total (3050)	M6010D ICP	100	269		*	mg/Kg	2	5	07/13/21 2:06	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-4

ACZ Sample ID: ***L66694-06***
Date Sampled: *06/02/21 12:12*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	07/12/21 9:03	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	07/12/21 9:03	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/12/21 9:03	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.274		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.4		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.6		*	%	0.1	0.5	06/25/21 22:17	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.53		*	%	0.01	0.1	07/12/21 8:54	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:18	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 10:55	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 10:55	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:07	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:23	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:23	jpb
Synthetic Precip. Leaching Procedure	M1312								06/29/21 7:47	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-5

ACZ Sample ID: ***L66694-07***
Date Sampled: *06/02/21 11:31*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 16:06	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 14:25	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.140	B		mg/L	0.05	0.25	07/02/21 17:02	jlw
Aluminum, total (3050)	M6010D ICP	100	6950		*	mg/Kg	5	25	07/13/21 2:10	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:20	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.892	B	*	mg/Kg	0.2	1	07/14/21 18:10	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00065	B	*	mg/L	0.0002	0.001	07/01/21 14:20	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	6.43			mg/Kg	0.1	0.5	07/14/21 18:10	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	07/01/21 14:20	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.904			mg/Kg	0.025	0.125	07/14/21 18:10	bsu
Calcium (1312)	M6010D ICP	1	12.2			mg/L	0.1	0.5	07/02/21 17:02	jlw
Calcium, total (3050)	M6010D ICP	100	41600			mg/Kg	10	50	07/13/21 2:10	jlw
Copper (1312)	M6020B ICP-MS	1	0.0736			mg/L	0.0008	0.002	07/01/21 14:20	bsu
Copper, total (3050)	M6020B ICP-MS	500	2430		*	mg/Kg	0.4	1	07/14/21 18:10	bsu
Iron (1312)	M6010D ICP	1	0.295		*	mg/L	0.06	0.15	07/02/21 17:02	jlw
Iron, total (3050)	M6010D ICP	200	59400		*	mg/Kg	12	30	07/16/21 4:02	jlw
Lead (1312)	M6020B ICP-MS	1	0.00050			mg/L	0.0001	0.0005	07/01/21 14:20	bsu
Lead, total (3050)	M6020B ICP-MS	500	23.5		*	mg/Kg	0.05	0.25	07/14/21 18:10	bsu
Magnesium (1312)	M6010D ICP	1	0.29	B		mg/L	0.2	1	07/02/21 17:02	jlw
Magnesium, total (3050)	M6010D ICP	100	2440			mg/Kg	20	100	07/13/21 2:10	jlw
Manganese (1312)	M6010D ICP	1	0.012	B		mg/L	0.01	0.05	07/02/21 17:02	jlw
Manganese, total (3050)	M6010D ICP	100	1070		*	mg/Kg	1	5	07/13/21 2:10	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:14	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	10.5		*	ng/g	1.39	6.95	06/28/21 18:07	aeh
Molybdenum (1312)	M6010D ICP	1	0.023	B	*	mg/L	0.02	0.1	07/02/21 17:02	jlw
Molybdenum, total (3050)	M6010D ICP	100	83.4		*	mg/Kg	2	10	07/13/21 2:10	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U		mg/L	0.0004	0.001	07/01/21 14:20	bsu
Nickel, total (3050)	M6020B ICP-MS	500	8.59			mg/Kg	0.2	0.5	07/14/21 18:10	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00207		*	mg/L	0.0001	0.00025	07/01/21 14:20	bsu
Selenium, total (3050)	M6020B ICP-MS	500	5.41		*	mg/Kg	0.05	0.125	07/14/21 18:10	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:20	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.109	B		mg/Kg	0.05	0.25	07/14/21 18:10	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U		mg/L	0.02	0.05	07/02/21 17:02	jlw
Zinc, total (3050)	M6010D ICP	100	192		*	mg/Kg	2	5	07/13/21 2:10	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-5

ACZ Sample ID: ***L66694-07***
Date Sampled: *06/02/21 11:31*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/12/21 9:11	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.1	B	*	%	0.1	0.5	07/12/21 9:11	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 9:11	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.212		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.4		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.6		*	%	0.1	0.5	06/25/21 23:40	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.56		*	%	0.01	0.1	07/12/21 9:00	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:22	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 11:14	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 11:14	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:08	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:28	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:28	jpb
Synthetic Precip. Leaching Procedure	M1312								06/29/21 8:49	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-6

ACZ Sample ID: ***L66694-08***
Date Sampled: *06/02/21 10:46*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 16:31	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 15:02	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.175	B		mg/L	0.05	0.25	07/02/21 17:10	jlw
Aluminum, total (3050)	M6010D ICP	101	10400		*	mg/Kg	5.05	25.3	07/13/21 2:14	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:22	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.973	B	*	mg/Kg	0.202	1.01	07/14/21 18:12	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00087	B	*	mg/L	0.0002	0.001	07/01/21 14:22	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	5.70			mg/Kg	0.101	0.505	07/14/21 18:12	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	07/01/21 14:22	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.789			mg/Kg	0.0253	0.126	07/14/21 18:12	bsu
Calcium (1312)	M6010D ICP	1	12.2			mg/L	0.1	0.5	07/02/21 17:10	jlw
Calcium, total (3050)	M6010D ICP	101	24700			mg/Kg	10.1	50.5	07/13/21 2:14	jlw
Copper (1312)	M6020B ICP-MS	1	0.0849			mg/L	0.0008	0.002	07/01/21 14:22	bsu
Copper, total (3050)	M6020B ICP-MS	10100	2680		*	mg/Kg	8.08	20.2	07/15/21 12:49	bsu
Iron (1312)	M6010D ICP	1	0.305		*	mg/L	0.06	0.15	07/02/21 17:10	jlw
Iron, total (3050)	M6010D ICP	101	32100		*	mg/Kg	6.06	15.2	07/13/21 2:14	jlw
Lead (1312)	M6020B ICP-MS	1	0.00057			mg/L	0.0001	0.0005	07/01/21 14:22	bsu
Lead, total (3050)	M6020B ICP-MS	505	37.2		*	mg/Kg	0.0505	0.253	07/14/21 18:12	bsu
Magnesium (1312)	M6010D ICP	1	0.42	B		mg/L	0.2	1	07/02/21 17:10	jlw
Magnesium, total (3050)	M6010D ICP	101	3620			mg/Kg	20.2	101	07/13/21 2:14	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U		mg/L	0.01	0.05	07/02/21 17:10	jlw
Manganese, total (3050)	M6010D ICP	101	867		*	mg/Kg	1.01	5.05	07/13/21 2:14	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:15	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	143		*	ng/g	1.94	9.7	06/28/21 18:16	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 17:10	jlw
Molybdenum, total (3050)	M6010D ICP	101	85.9		*	mg/Kg	2.02	10.1	07/13/21 2:14	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U		mg/L	0.0004	0.001	07/01/21 14:22	bsu
Nickel, total (3050)	M6020B ICP-MS	505	7.95			mg/Kg	0.202	0.505	07/14/21 18:12	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00169		*	mg/L	0.0001	0.00025	07/01/21 14:22	bsu
Selenium, total (3050)	M6020B ICP-MS	505	3.10		*	mg/Kg	0.0505	0.126	07/14/21 18:12	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:22	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.184	B		mg/Kg	0.0505	0.253	07/14/21 18:12	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U		mg/L	0.02	0.05	07/02/21 17:10	jlw
Zinc, total (3050)	M6010D ICP	101	151		*	mg/Kg	2.02	5.05	07/13/21 2:14	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-6

ACZ Sample ID: ***L66694-08***
Date Sampled: *06/02/21 10:46*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	07/12/21 9:19	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	07/12/21 9:19	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	07/12/21 9:19	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.211		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.0		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.5		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.3		*	%	0.1	0.5	06/26/21 1:02	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.32		*	%	0.01	0.1	07/12/21 9:06	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:26	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 11:33	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 11:33	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:10	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:32	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:32	jpb
Synthetic Precip. Leaching Procedure	M1312								06/29/21 9:52	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4A-7

ACZ Sample ID: ***L66694-09***
Date Sampled: *06/02/21 10:01*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 16:56	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 15:38	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.154	B		mg/L	0.05	0.25	07/02/21 17:14	jlw
Aluminum, total (3050)	M6010D ICP	101	9040		*	mg/Kg	5.05	25.3	07/13/21 2:18	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:23	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.266	B	*	mg/Kg	0.202	1.01	07/14/21 18:14	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00049	B	*	mg/L	0.0002	0.001	07/01/21 14:23	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	4.02			mg/Kg	0.101	0.505	07/14/21 18:14	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	07/01/21 14:23	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	1.34			mg/Kg	0.0253	0.126	07/14/21 18:14	bsu
Calcium (1312)	M6010D ICP	1	11.8			mg/L	0.1	0.5	07/02/21 17:14	jlw
Calcium, total (3050)	M6010D ICP	101	34700			mg/Kg	10.1	50.5	07/13/21 2:18	jlw
Copper (1312)	M6020B ICP-MS	1	0.111			mg/L	0.0008	0.002	07/01/21 14:23	bsu
Copper, total (3050)	M6020B ICP-MS	10100	3890		*	mg/Kg	8.08	20.2	07/15/21 12:51	bsu
Iron (1312)	M6010D ICP	1	0.316		*	mg/L	0.06	0.15	07/02/21 17:14	jlw
Iron, total (3050)	M6010D ICP	202	56200		*	mg/Kg	12.1	30.3	07/16/21 4:06	jlw
Lead (1312)	M6020B ICP-MS	1	0.00068			mg/L	0.0001	0.0005	07/01/21 14:23	bsu
Lead, total (3050)	M6020B ICP-MS	505	66.7		*	mg/Kg	0.0505	0.253	07/14/21 18:14	bsu
Magnesium (1312)	M6010D ICP	1	0.29	B		mg/L	0.2	1	07/02/21 17:14	jlw
Magnesium, total (3050)	M6010D ICP	101	7120			mg/Kg	20.2	101	07/13/21 2:18	jlw
Manganese (1312)	M6010D ICP	1	0.014	B		mg/L	0.01	0.05	07/02/21 17:14	jlw
Manganese, total (3050)	M6010D ICP	101	1380		*	mg/Kg	1.01	5.05	07/13/21 2:18	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 15:16	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	33		*	ng/g	1.92	9.6	06/28/21 18:31	aeh
Molybdenum (1312)	M6010D ICP	1	0.059	B	*	mg/L	0.02	0.1	07/02/21 17:14	jlw
Molybdenum, total (3050)	M6010D ICP	101	74.6		*	mg/Kg	2.02	10.1	07/13/21 2:18	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U		mg/L	0.0004	0.001	07/01/21 14:23	bsu
Nickel, total (3050)	M6020B ICP-MS	505	8.57			mg/Kg	0.202	0.505	07/14/21 18:14	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00202		*	mg/L	0.0001	0.00025	07/01/21 14:23	bsu
Selenium, total (3050)	M6020B ICP-MS	505	3.89		*	mg/Kg	0.0505	0.126	07/14/21 18:14	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:23	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.157	B		mg/Kg	0.0505	0.253	07/14/21 18:14	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U		mg/L	0.02	0.05	07/02/21 17:14	jlw
Zinc, total (3050)	M6010D ICP	101	215		*	mg/Kg	2.02	5.05	07/13/21 2:18	jlw

Hudbay Minerals
Project ID:
Sample ID: D4A-7

ACZ Sample ID: ***L66694-09***
Date Sampled: *06/02/21 10:01*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 9:26	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	07/12/21 9:26	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 9:26	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.363		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.4		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.5		*	%	0.1	0.5	06/26/21 2:25	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.78		*	%	0.01	0.1	07/12/21 9:12	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:30	jpb
Digestion - Hot Plate	M3050B ICP-MS								07/09/21 11:52	mep
Digestion - Hot Plate	M3050B ICP								07/09/21 11:52	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:11	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:37	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:37	jpb
Synthetic Precip. Leaching Procedure	M1312								06/29/21 10:54	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-S1

ACZ Sample ID: ***L66694-10***
Date Sampled: *06/03/21 08:09*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 17:20	kja
Total Hot Plate Digestion	M3010A ICP-MS								06/30/21 16:15	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	1.40			mg/L	0.05	0.25	07/02/21 17:18	jlw
Aluminum, total (3050)	M6010D ICP	105	15500		*	mg/Kg	5.25	26.3	07/13/21 2:22	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/01/21 14:25	bsu
Antimony, total (3050)	M6020B ICP-MS	525	0.515	B	*	mg/Kg	0.21	1.05	07/14/21 18:16	bsu
Arsenic (1312)	M6020B ICP-MS	1	<0.0002	U	*	mg/L	0.0002	0.001	07/01/21 14:25	bsu
Arsenic, total (3050)	M6020B ICP-MS	525	12.3			mg/Kg	0.105	0.525	07/14/21 18:16	bsu
Cadmium (1312)	M6020B ICP-MS	1	0.0294			mg/L	0.00005	0.00025	07/01/21 14:25	bsu
Cadmium, total (3050)	M6020B ICP-MS	525	1.74			mg/Kg	0.0263	0.131	07/14/21 18:16	bsu
Calcium (1312)	M6010D ICP	2	615			mg/L	0.2	1	07/07/21 21:59	jlw
Calcium, total (3050)	M6010D ICP	210	73400			mg/Kg	21	105	07/14/21 11:19	jlw
Copper (1312)	M6020B ICP-MS	50	14.7			mg/L	0.04	0.1	07/01/21 16:50	bsu
Copper, total (3050)	M6020B ICP-MS	10500	3960		*	mg/Kg	8.4	21	07/15/21 12:52	bsu
Iron (1312)	M6010D ICP	1	<0.06	U	*	mg/L	0.06	0.15	07/02/21 17:18	jlw
Iron, total (3050)	M6010D ICP	525	115000		*	mg/Kg	31.5	78.8	07/16/21 4:10	jlw
Lead (1312)	M6020B ICP-MS	1	0.00010	B		mg/L	0.0001	0.0005	07/01/21 14:25	bsu
Lead, total (3050)	M6020B ICP-MS	525	30.9		*	mg/Kg	0.0525	0.263	07/14/21 18:16	bsu
Magnesium (1312)	M6010D ICP	1	12.9			mg/L	0.2	1	07/02/21 17:18	jlw
Magnesium, total (3050)	M6010D ICP	105	10500			mg/Kg	21	105	07/13/21 2:22	jlw
Manganese (1312)	M6010D ICP	1	2.11			mg/L	0.01	0.05	07/02/21 17:18	jlw
Manganese, total (3050)	M6010D ICP	105	1890		*	mg/Kg	1.05	5.25	07/13/21 2:22	jlw
Mercury (1312)	M7470A CVAA	1	0.00023	B	*	mg/L	0.0002	0.001	07/02/21 15:17	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	398		*	ng/g	1.73	8.65	06/28/21 18:40	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 17:18	jlw
Molybdenum, total (3050)	M6010D ICP	105	25.8		*	mg/Kg	2.1	10.5	07/13/21 2:22	jlw
Nickel (1312)	M6020B ICP-MS	1	0.0128			mg/L	0.0004	0.001	07/01/21 14:25	bsu
Nickel, total (3050)	M6020B ICP-MS	525	7.33			mg/Kg	0.21	0.525	07/14/21 18:16	bsu
Selenium (1312)	M6020B ICP-MS	1	0.0107		*	mg/L	0.0001	0.00025	07/01/21 14:25	bsu
Selenium, total (3050)	M6020B ICP-MS	525	7.07		*	mg/Kg	0.0525	0.131	07/14/21 18:16	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/01/21 14:25	bsu
Thallium, total (3050)	M6020B ICP-MS	525	0.378			mg/Kg	0.0525	0.263	07/14/21 18:16	bsu
Zinc (1312)	M6010D ICP	1	3.96			mg/L	0.02	0.05	07/02/21 17:18	jlw
Zinc, total (3050)	M6010D ICP	105	578		*	mg/Kg	2.1	5.25	07/13/21 2:22	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-S1

ACZ Sample ID: ***L66694-10***
Date Sampled: *06/03/21 08:09*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	07/12/21 9:34	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	07/12/21 9:34	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	07/12/21 9:34	jpb
Conductivity @25C	SM2510B									
Conductivity		1	2.72		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.4		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	4.0		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	96.1		*	%	0.1	0.5	06/26/21 3:47	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	4.12		*	%	0.01	0.1	07/12/21 9:18	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:33	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 12:11	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 12:11	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:12	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:42	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:42	jpb
Synthetic Precip. Leaching Procedure	M1312								06/29/21 11:57	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-S2

ACZ Sample ID: ***L66694-11***
Date Sampled: *06/03/21 08:41*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 14:27	kja
Total Hot Plate Digestion	M3010A ICP-MS								07/06/21 7:35	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	54.4		*	mg/L	0.05	0.25	07/02/21 14:37	jlw
Aluminum, total (3050)	M6010D ICP	103	6640		*	mg/Kg	5.15	25.8	07/13/21 2:26	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/08/21 17:39	bsu
Antimony, total (3050)	M6020B ICP-MS	515	0.327	B	*	mg/Kg	0.206	1.03	07/14/21 18:18	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00133		*	mg/L	0.0002	0.001	07/08/21 17:39	bsu
Arsenic, total (3050)	M6020B ICP-MS	515	7.90			mg/Kg	0.103	0.515	07/14/21 18:18	bsu
Cadmium (1312)	M6020B ICP-MS	1	0.0131		*	mg/L	0.00005	0.00025	07/08/21 17:39	bsu
Cadmium, total (3050)	M6020B ICP-MS	515	0.650			mg/Kg	0.0258	0.129	07/14/21 18:18	bsu
Calcium (1312)	M6010D ICP	2	574			mg/L	0.2	1	07/07/21 23:44	jlw
Calcium, total (3050)	M6010D ICP	103	43700			mg/Kg	10.3	51.5	07/13/21 2:26	jlw
Copper (1312)	M6020B ICP-MS	200	54.2			mg/L	0.16	0.4	07/09/21 11:31	bsu
Copper, total (3050)	M6020B ICP-MS	10300	3980		*	mg/Kg	8.24	20.6	07/15/21 12:54	bsu
Iron (1312)	M6010D ICP	1	72.4		*	mg/L	0.06	0.15	07/02/21 14:37	jlw
Iron, total (3050)	M6010D ICP	515	137000		*	mg/Kg	30.9	77.3	07/16/21 4:14	jlw
Lead (1312)	M6020B ICP-MS	1	0.00125		*	mg/L	0.0001	0.0005	07/08/21 17:39	bsu
Lead, total (3050)	M6020B ICP-MS	515	63.9		*	mg/Kg	0.0515	0.258	07/14/21 18:18	bsu
Magnesium (1312)	M6010D ICP	1	63.7		*	mg/L	0.2	1	07/02/21 14:37	jlw
Magnesium, total (3050)	M6010D ICP	103	3780			mg/Kg	20.6	103	07/13/21 2:26	jlw
Manganese (1312)	M6010D ICP	1	9.33		*	mg/L	0.01	0.05	07/02/21 14:37	jlw
Manganese, total (3050)	M6010D ICP	103	1010		*	mg/Kg	1.03	5.15	07/13/21 2:26	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 16:24	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	166		*	ng/g	1.87	9.35	06/28/21 18:49	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 14:37	jlw
Molybdenum, total (3050)	M6010D ICP	103	125		*	mg/Kg	2.06	10.3	07/13/21 2:26	jlw
Nickel (1312)	M6020B ICP-MS	1	0.0283		*	mg/L	0.0004	0.001	07/08/21 17:39	bsu
Nickel, total (3050)	M6020B ICP-MS	515	3.44			mg/Kg	0.206	0.515	07/14/21 18:18	bsu
Selenium (1312)	M6020B ICP-MS	100	0.0108	B	*	mg/L	0.01	0.025	07/09/21 10:48	bsu
Selenium, total (3050)	M6020B ICP-MS	515	8.15		*	mg/Kg	0.0515	0.129	07/14/21 18:18	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/08/21 17:39	bsu
Thallium, total (3050)	M6020B ICP-MS	515	0.297			mg/Kg	0.0515	0.258	07/14/21 18:18	bsu
Zinc (1312)	M6010D ICP	1	2.37		*	mg/L	0.02	0.05	07/02/21 14:37	jlw
Zinc, total (3050)	M6010D ICP	103	245		*	mg/Kg	2.06	5.15	07/13/21 2:26	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-S2

ACZ Sample ID: ***L66694-11***
Date Sampled: *06/03/21 08:41*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	07/12/21 9:42	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	07/12/21 9:42	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	07/12/21 9:42	jpb
Conductivity @25C	SM2510B									
Conductivity		1	12.7		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	2.2		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	96.5		*	%	0.1	0.5	06/26/21 5:10	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	5.08		*	%	0.01	0.1	07/12/21 9:24	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:37	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 12:30	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 12:30	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:13	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:46	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:46	jpb
Synthetic Precip. Leaching Procedure	M1312								06/30/21 5:18	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-1

ACZ Sample ID: ***L66694-12***
Date Sampled: *06/03/21 11:59*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 14:52	kja
Total Hot Plate Digestion	M3010A ICP-MS								07/06/21 7:35	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.790		*	mg/L	0.05	0.25	07/02/21 14:41	jlw
Aluminum, total (3050)	M6010D ICP	100	11600		*	mg/Kg	5	25	07/13/21 2:31	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/08/21 17:41	bsu
Antimony, total (3050)	M6020B ICP-MS	500	1.16		*	mg/Kg	0.2	1	07/14/21 18:20	bsu
Arsenic (1312)	M6020B ICP-MS	1	<0.0002	U	*	mg/L	0.0002	0.001	07/08/21 17:41	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	9.13			mg/Kg	0.1	0.5	07/14/21 18:20	bsu
Cadmium (1312)	M6020B ICP-MS	1	0.00343		*	mg/L	0.00005	0.00025	07/08/21 17:41	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	2.34			mg/Kg	0.025	0.125	07/14/21 18:20	bsu
Calcium (1312)	M6010D ICP	1	24.5			mg/L	0.1	0.5	07/02/21 14:41	jlw
Calcium, total (3050)	M6010D ICP	100	33600			mg/Kg	10	50	07/13/21 2:31	jlw
Copper (1312)	M6020B ICP-MS	20	4.16			mg/L	0.016	0.04	07/09/21 10:49	bsu
Copper, total (3050)	M6020B ICP-MS	20000	5540		*	mg/Kg	16	40	07/15/21 12:56	bsu
Iron (1312)	M6010D ICP	1	<0.06	U	*	mg/L	0.06	0.15	07/02/21 14:41	jlw
Iron, total (3050)	M6010D ICP	500	105000		*	mg/Kg	30	75	07/16/21 4:26	jlw
Lead (1312)	M6020B ICP-MS	1	0.00028	B	*	mg/L	0.0001	0.0005	07/08/21 17:41	bsu
Lead, total (3050)	M6020B ICP-MS	500	67.9		*	mg/Kg	0.05	0.25	07/14/21 18:20	bsu
Magnesium (1312)	M6010D ICP	1	2.99		*	mg/L	0.2	1	07/02/21 14:41	jlw
Magnesium, total (3050)	M6010D ICP	100	4150			mg/Kg	20	100	07/13/21 2:31	jlw
Manganese (1312)	M6010D ICP	1	1.73		*	mg/L	0.01	0.05	07/02/21 14:41	jlw
Manganese, total (3050)	M6010D ICP	100	3070		*	mg/Kg	1	5	07/13/21 2:31	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 16:25	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	100		*	ng/g	1.82	9.1	06/28/21 18:58	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 14:41	jlw
Molybdenum, total (3050)	M6010D ICP	100	47.8		*	mg/Kg	2	10	07/13/21 2:31	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00353		*	mg/L	0.0004	0.001	07/08/21 17:41	bsu
Nickel, total (3050)	M6020B ICP-MS	500	6.30			mg/Kg	0.2	0.5	07/14/21 18:20	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00104		*	mg/L	0.0001	0.00025	07/08/21 17:41	bsu
Selenium, total (3050)	M6020B ICP-MS	500	6.00		*	mg/Kg	0.05	0.125	07/14/21 18:20	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/08/21 17:41	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.214	B		mg/Kg	0.05	0.25	07/14/21 18:20	bsu
Zinc (1312)	M6010D ICP	1	0.463		*	mg/L	0.02	0.05	07/02/21 14:41	jlw
Zinc, total (3050)	M6010D ICP	100	660		*	mg/Kg	2	5	07/13/21 2:31	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-1

ACZ Sample ID: ***L66694-12***
Date Sampled: *06/03/21 11:59*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 9:50	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	07/12/21 9:50	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 9:50	jpb
Conductivity @25C	SM2510B									
Conductivity		1	1.68		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	3.9		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.4		*	%	0.1	0.5	06/26/21 6:32	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	2.38		*	%	0.01	0.1	07/12/21 9:30	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:41	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 12:49	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 12:49	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:14	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:51	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:51	jpb
Synthetic Precip. Leaching Procedure	M1312								06/30/21 6:23	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-2

ACZ Sample ID: ***L66694-13***
Date Sampled: *06/03/21 11:29*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 15:17	kja
Total Hot Plate Digestion	M3010A ICP-MS								07/06/21 7:35	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	<0.05	U	*	mg/L	0.05	0.25	07/02/21 14:45	jlw
Aluminum, total (3050)	M6010D ICP	100	13800		*	mg/Kg	5	25	07/13/21 2:35	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/08/21 17:43	bsu
Antimony, total (3050)	M6020B ICP-MS	500	1.24		*	mg/Kg	0.2	1	07/14/21 18:22	bsu
Arsenic (1312)	M6020B ICP-MS	1	<0.0002	U	*	mg/L	0.0002	0.001	07/08/21 17:43	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	8.28			mg/Kg	0.1	0.5	07/14/21 18:22	bsu
Cadmium (1312)	M6020B ICP-MS	1	0.000207	B	*	mg/L	0.00005	0.00025	07/08/21 17:43	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	1.44			mg/Kg	0.025	0.125	07/14/21 18:22	bsu
Calcium (1312)	M6010D ICP	1	42.3			mg/L	0.1	0.5	07/02/21 14:45	jlw
Calcium, total (3050)	M6010D ICP	100	36400			mg/Kg	10	50	07/13/21 2:35	jlw
Copper (1312)	M6020B ICP-MS	1	0.0435		*	mg/L	0.0008	0.002	07/08/21 17:43	bsu
Copper, total (3050)	M6020B ICP-MS	20000	5240		*	mg/Kg	16	40	07/15/21 12:58	bsu
Iron (1312)	M6010D ICP	1	<0.06	U	*	mg/L	0.06	0.15	07/02/21 14:45	jlw
Iron, total (3050)	M6010D ICP	200	90500		*	mg/Kg	12	30	07/16/21 4:30	jlw
Lead (1312)	M6020B ICP-MS	1	0.00012	B	*	mg/L	0.0001	0.0005	07/08/21 17:43	bsu
Lead, total (3050)	M6020B ICP-MS	500	68.9		*	mg/Kg	0.05	0.25	07/14/21 18:22	bsu
Magnesium (1312)	M6010D ICP	1	2.54		*	mg/L	0.2	1	07/02/21 14:45	jlw
Magnesium, total (3050)	M6010D ICP	100	4420			mg/Kg	20	100	07/13/21 2:35	jlw
Manganese (1312)	M6010D ICP	1	0.223		*	mg/L	0.01	0.05	07/02/21 14:45	jlw
Manganese, total (3050)	M6010D ICP	100	2140		*	mg/Kg	1	5	07/13/21 2:35	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 16:26	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	39.1		*	ng/g	1.69	8.45	06/28/21 19:06	aeh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/02/21 14:45	jlw
Molybdenum, total (3050)	M6010D ICP	100	43.6		*	mg/Kg	2	10	07/13/21 2:35	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00060	B	*	mg/L	0.0004	0.001	07/08/21 17:43	bsu
Nickel, total (3050)	M6020B ICP-MS	500	7.65			mg/Kg	0.2	0.5	07/14/21 18:22	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00129		*	mg/L	0.0001	0.00025	07/08/21 17:43	bsu
Selenium, total (3050)	M6020B ICP-MS	500	6.71		*	mg/Kg	0.05	0.125	07/14/21 18:22	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/08/21 17:43	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.174	B		mg/Kg	0.05	0.25	07/14/21 18:22	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/02/21 14:45	jlw
Zinc, total (3050)	M6010D ICP	100	518		*	mg/Kg	2	5	07/13/21 2:35	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-2

ACZ Sample ID: ***L66694-13***
Date Sampled: *06/03/21 11:29*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	07/12/21 9:58	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	07/12/21 9:58	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/12/21 9:58	jpb
Conductivity @25C	SM2510B									
Conductivity		1	1.43		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.3		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	5.5		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.5		*	%	0.1	0.5	06/26/21 7:55	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	2.44		*	%	0.01	0.1	07/12/21 9:36	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:45	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 13:08	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 13:08	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:15	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 15:56	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 15:56	jpb
Synthetic Precip. Leaching Procedure	M1312								06/30/21 7:28	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-3

ACZ Sample ID: ***L66694-14***
Date Sampled: *06/03/21 10:59*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 15:41	kja
Total Hot Plate Digestion	M3010A ICP-MS								07/06/21 7:35	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.052	B	*	mg/L	0.05	0.25	07/02/21 15:00	jlw
Aluminum, total (3050)	M6010D ICP	101	11500		*	mg/Kg	5.05	25.3	07/13/21 2:39	jlw
Antimony (1312)	M6020B ICP-MS	1	0.00065	B	*	mg/L	0.0004	0.002	07/08/21 17:47	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.986	B	*	mg/Kg	0.202	1.01	07/14/21 18:27	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00031	B	*	mg/L	0.0002	0.001	07/08/21 17:47	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	6.83			mg/Kg	0.101	0.505	07/14/21 18:27	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/08/21 17:47	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	1.71			mg/Kg	0.0253	0.126	07/14/21 18:27	bsu
Calcium (1312)	M6010D ICP	1	19.3			mg/L	0.1	0.5	07/02/21 15:00	jlw
Calcium, total (3050)	M6010D ICP	101	47200			mg/Kg	10.1	50.5	07/13/21 2:39	jlw
Copper (1312)	M6020B ICP-MS	1	0.0491		*	mg/L	0.0008	0.002	07/08/21 17:47	bsu
Copper, total (3050)	M6020B ICP-MS	10100	3950		*	mg/Kg	8.08	20.2	07/15/21 13:00	bsu
Iron (1312)	M6010D ICP	1	0.127	B	*	mg/L	0.06	0.15	07/02/21 15:00	jlw
Iron, total (3050)	M6010D ICP	202	76200		*	mg/Kg	12.1	30.3	07/16/21 4:34	jlw
Lead (1312)	M6020B ICP-MS	1	0.00047	B	*	mg/L	0.0001	0.0005	07/08/21 17:47	bsu
Lead, total (3050)	M6020B ICP-MS	505	50.0		*	mg/Kg	0.0505	0.253	07/14/21 18:27	bsu
Magnesium (1312)	M6010D ICP	1	0.42	B	*	mg/L	0.2	1	07/02/21 15:00	jlw
Magnesium, total (3050)	M6010D ICP	101	4110			mg/Kg	20.2	101	07/13/21 2:39	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/02/21 15:00	jlw
Manganese, total (3050)	M6010D ICP	101	2120		*	mg/Kg	1.01	5.05	07/13/21 2:39	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 16:26	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	52.7		*	ng/g	3.35	16.75	06/30/21 15:12	mlh
Molybdenum (1312)	M6010D ICP	1	0.022	B	*	mg/L	0.02	0.1	07/02/21 15:00	jlw
Molybdenum, total (3050)	M6010D ICP	101	45.4		*	mg/Kg	2.02	10.1	07/13/21 2:39	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/08/21 17:47	bsu
Nickel, total (3050)	M6020B ICP-MS	505	7.96			mg/Kg	0.202	0.505	07/14/21 18:27	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00159		*	mg/L	0.0001	0.00025	07/08/21 17:47	bsu
Selenium, total (3050)	M6020B ICP-MS	505	4.02		*	mg/Kg	0.0505	0.126	07/14/21 18:27	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/08/21 17:47	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.117	B		mg/Kg	0.0505	0.253	07/14/21 18:27	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/02/21 15:00	jlw
Zinc, total (3050)	M6010D ICP	101	525		*	mg/Kg	2.02	5.05	07/13/21 2:39	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-3

ACZ Sample ID: ***L66694-14***
Date Sampled: *06/03/21 10:59*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/12/21 10:06	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	07/12/21 10:06	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/12/21 10:06	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.626		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.3		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.2		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.5		*	%	0.1	0.5	06/26/21 9:17	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	1.12		*	%	0.01	0.1	07/12/21 9:42	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:48	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 13:27	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 13:27	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:16	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 16:00	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 16:00	jpb
Synthetic Precip. Leaching Procedure	M1312								06/30/21 8:33	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-4

ACZ Sample ID: ***L66694-15***
Date Sampled: *06/03/21 10:26*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 16:06	kja
Total Hot Plate Digestion	M3010A ICP-MS								07/06/21 7:35	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.105	B	*	mg/L	0.05	0.25	07/02/21 15:04	jlw
Aluminum, total (3050)	M6010D ICP	101	8580		*	mg/Kg	5.05	25.3	07/13/21 2:51	jlw
Antimony (1312)	M6020B ICP-MS	1	0.00075	B	*	mg/L	0.0004	0.002	07/08/21 17:49	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.488	B	*	mg/Kg	0.202	1.01	07/14/21 18:29	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00063	B	*	mg/L	0.0002	0.001	07/08/21 17:49	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	4.11			mg/Kg	0.101	0.505	07/14/21 18:29	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/08/21 17:49	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	1.55			mg/Kg	0.0253	0.126	07/14/21 18:29	bsu
Calcium (1312)	M6010D ICP	1	13.3			mg/L	0.1	0.5	07/02/21 15:04	jlw
Calcium, total (3050)	M6010D ICP	202	67500			mg/Kg	20.2	101	07/14/21 11:38	jlw
Copper (1312)	M6020B ICP-MS	1	0.0979		*	mg/L	0.0008	0.002	07/08/21 17:49	bsu
Copper, total (3050)	M6020B ICP-MS	20200	4320		*	mg/Kg	16.2	40.4	07/15/21 13:05	bsu
Iron (1312)	M6010D ICP	1	0.348		*	mg/L	0.06	0.15	07/02/21 15:04	jlw
Iron, total (3050)	M6010D ICP	202	70900		*	mg/Kg	12.1	30.3	07/16/21 4:42	jlw
Lead (1312)	M6020B ICP-MS	1	0.00192		*	mg/L	0.0001	0.0005	07/08/21 17:49	bsu
Lead, total (3050)	M6020B ICP-MS	505	43.4		*	mg/Kg	0.0505	0.253	07/14/21 18:29	bsu
Magnesium (1312)	M6010D ICP	1	0.45	B	*	mg/L	0.2	1	07/02/21 15:04	jlw
Magnesium, total (3050)	M6010D ICP	101	3600			mg/Kg	20.2	101	07/13/21 2:51	jlw
Manganese (1312)	M6010D ICP	1	0.019	B	*	mg/L	0.01	0.05	07/02/21 15:04	jlw
Manganese, total (3050)	M6010D ICP	101	1960		*	mg/Kg	1.01	5.05	07/13/21 2:51	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 16:27	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	33.1		*	ng/g	3.3	16.5	06/30/21 15:28	mlh
Molybdenum (1312)	M6010D ICP	1	0.087	B	*	mg/L	0.02	0.1	07/02/21 15:04	jlw
Molybdenum, total (3050)	M6010D ICP	101	28.5		*	mg/Kg	2.02	10.1	07/13/21 2:51	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/08/21 17:49	bsu
Nickel, total (3050)	M6020B ICP-MS	505	7.21			mg/Kg	0.202	0.505	07/14/21 18:29	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00146		*	mg/L	0.0001	0.00025	07/08/21 17:49	bsu
Selenium, total (3050)	M6020B ICP-MS	505	4.06		*	mg/Kg	0.0505	0.126	07/14/21 18:29	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/08/21 17:49	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.0724	B		mg/Kg	0.0505	0.253	07/14/21 18:29	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/02/21 15:04	jlw
Zinc, total (3050)	M6010D ICP	101	399		*	mg/Kg	2.02	5.05	07/13/21 2:51	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-4

ACZ Sample ID: ***L66694-15***
Date Sampled: *06/03/21 10:26*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	07/12/21 10:14	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.4	B	*	%	0.1	0.5	07/12/21 10:14	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 10:14	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.315		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.3		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.5		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.4		*	%	0.1	0.5	06/26/21 10:40	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.87		*	%	0.01	0.1	07/12/21 9:48	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:52	jpb
Digestion - Hot Plate	M3050B ICP								07/09/21 13:46	mep
Digestion - Hot Plate	M3050B ICP-MS								07/09/21 13:46	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:17	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 16:05	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 16:05	jpb
Synthetic Precip. Leaching Procedure	M1312								06/30/21 9:39	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-5

ACZ Sample ID: ***L66694-16***
Date Sampled: *06/03/21 09:55*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 16:31	kja
Total Hot Plate Digestion	M3010A ICP-MS								07/06/21 7:35	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.084	B	*	mg/L	0.05	0.25	07/02/21 15:08	jlw
Aluminum, total (3050)	M6010D ICP	100	9030		*	mg/Kg	5	25	07/13/21 2:55	jlw
Antimony (1312)	M6020B ICP-MS	1	0.00084	B	*	mg/L	0.0004	0.002	07/08/21 17:50	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.536	B	*	mg/Kg	0.2	1	07/14/21 18:35	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00089	B	*	mg/L	0.0002	0.001	07/08/21 17:50	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	3.56			mg/Kg	0.1	0.5	07/14/21 18:35	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/08/21 17:50	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	1.63			mg/Kg	0.025	0.125	07/14/21 18:35	bsu
Calcium (1312)	M6010D ICP	1	12.7			mg/L	0.1	0.5	07/02/21 15:08	jlw
Calcium, total (3050)	M6010D ICP	200	74200			mg/Kg	20	100	07/14/21 11:50	jlw
Copper (1312)	M6020B ICP-MS	1	0.103		*	mg/L	0.0008	0.002	07/08/21 17:50	bsu
Copper, total (3050)	M6020B ICP-MS	20000	5870		*	mg/Kg	16	40	07/15/21 13:10	bsu
Iron (1312)	M6010D ICP	1	0.312		*	mg/L	0.06	0.15	07/02/21 15:08	jlw
Iron, total (3050)	M6010D ICP	200	63500		*	mg/Kg	12	30	07/16/21 4:46	jlw
Lead (1312)	M6020B ICP-MS	1	0.00147		*	mg/L	0.0001	0.0005	07/08/21 17:50	bsu
Lead, total (3050)	M6020B ICP-MS	500	19.8		*	mg/Kg	0.05	0.25	07/14/21 18:35	bsu
Magnesium (1312)	M6010D ICP	1	0.52	B	*	mg/L	0.2	1	07/02/21 15:08	jlw
Magnesium, total (3050)	M6010D ICP	100	4200			mg/Kg	20	100	07/13/21 2:55	jlw
Manganese (1312)	M6010D ICP	1	0.021	B	*	mg/L	0.01	0.05	07/02/21 15:08	jlw
Manganese, total (3050)	M6010D ICP	100	2110		*	mg/Kg	1	5	07/13/21 2:55	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 16:28	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	32		*	ng/g	2.96	14.8	06/30/21 15:37	mlh
Molybdenum (1312)	M6010D ICP	1	0.045	B	*	mg/L	0.02	0.1	07/02/21 15:08	jlw
Molybdenum, total (3050)	M6010D ICP	100	48.6		*	mg/Kg	2	10	07/13/21 2:55	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/08/21 17:50	bsu
Nickel, total (3050)	M6020B ICP-MS	500	6.88			mg/Kg	0.2	0.5	07/14/21 18:35	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00158		*	mg/L	0.0001	0.00025	07/08/21 17:50	bsu
Selenium, total (3050)	M6020B ICP-MS	500	2.27		*	mg/Kg	0.05	0.125	07/14/21 18:35	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/08/21 17:50	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0784	B		mg/Kg	0.05	0.25	07/14/21 18:35	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/02/21 15:08	jlw
Zinc, total (3050)	M6010D ICP	100	474		*	mg/Kg	2	5	07/13/21 2:55	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-5

ACZ Sample ID: ***L66694-16***
Date Sampled: *06/03/21 09:55*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	07/12/21 10:22	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.7		*	%	0.1	0.5	07/12/21 10:22	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 10:22	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.291		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	21.9		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.6		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.2		*	%	0.1	0.5	06/26/21 12:02	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.54		*	%	0.01	0.1	07/12/21 9:54	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 14:56	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 14:43	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 14:43	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:18	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 16:10	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 16:10	jpb
Synthetic Precip. Leaching Procedure	M1312								06/30/21 10:44	gkh/zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D4B-6

ACZ Sample ID: ***L66694-17***
Date Sampled: *06/03/21 09:25*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								07/01/21 16:56	kja
Total Hot Plate Digestion	M3010A ICP-MS								07/06/21 7:35	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.063	B	*	mg/L	0.05	0.25	07/02/21 15:12	jlw
Aluminum, total (3050)	M6010D ICP	101	10900		*	mg/Kg	5.05	25.3	07/13/21 2:59	jlw
Antimony (1312)	M6020B ICP-MS	1	0.00090	B	*	mg/L	0.0004	0.002	07/08/21 17:52	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.767	B	*	mg/Kg	0.202	1.01	07/14/21 18:36	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00092	B	*	mg/L	0.0002	0.001	07/08/21 17:52	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	5.39			mg/Kg	0.101	0.505	07/14/21 18:36	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/08/21 17:52	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	2.25			mg/Kg	0.0253	0.126	07/14/21 18:36	bsu
Calcium (1312)	M6010D ICP	1	13.4			mg/L	0.1	0.5	07/02/21 15:12	jlw
Calcium, total (3050)	M6010D ICP	202	69600			mg/Kg	20.2	101	07/14/21 11:54	jlw
Copper (1312)	M6020B ICP-MS	1	0.106		*	mg/L	0.0008	0.002	07/08/21 17:52	bsu
Copper, total (3050)	M6020B ICP-MS	20200	5690		*	mg/Kg	16.2	40.4	07/15/21 13:12	bsu
Iron (1312)	M6010D ICP	1	0.227		*	mg/L	0.06	0.15	07/02/21 15:12	jlw
Iron, total (3050)	M6010D ICP	202	65000		*	mg/Kg	12.1	30.3	07/16/21 4:50	jlw
Lead (1312)	M6020B ICP-MS	1	0.00112		*	mg/L	0.0001	0.0005	07/08/21 17:52	bsu
Lead, total (3050)	M6020B ICP-MS	505	57.2		*	mg/Kg	0.0505	0.253	07/14/21 18:36	bsu
Magnesium (1312)	M6010D ICP	1	0.59	B	*	mg/L	0.2	1	07/02/21 15:12	jlw
Magnesium, total (3050)	M6010D ICP	101	5660			mg/Kg	20.2	101	07/13/21 2:59	jlw
Manganese (1312)	M6010D ICP	1	0.017	B	*	mg/L	0.01	0.05	07/02/21 15:12	jlw
Manganese, total (3050)	M6010D ICP	101	2280		*	mg/Kg	1.01	5.05	07/13/21 2:59	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/02/21 16:29	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	40.4		*	ng/g	2.88	14.4	06/30/21 15:45	mlh
Molybdenum (1312)	M6010D ICP	1	0.032	B	*	mg/L	0.02	0.1	07/02/21 15:12	jlw
Molybdenum, total (3050)	M6010D ICP	101	50.2		*	mg/Kg	2.02	10.1	07/13/21 2:59	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/08/21 17:52	bsu
Nickel, total (3050)	M6020B ICP-MS	505	7.64			mg/Kg	0.202	0.505	07/14/21 18:36	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00134		*	mg/L	0.0001	0.00025	07/08/21 17:52	bsu
Selenium, total (3050)	M6020B ICP-MS	505	3.22		*	mg/Kg	0.0505	0.126	07/14/21 18:36	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/08/21 17:52	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.120	B		mg/Kg	0.0505	0.253	07/14/21 18:36	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/02/21 15:12	jlw
Zinc, total (3050)	M6010D ICP	101	528		*	mg/Kg	2.02	5.05	07/13/21 2:59	jlw

Hudbay Minerals
Project ID:
Sample ID: D4B-6

ACZ Sample ID: ***L66694-17***
Date Sampled: *06/03/21 09:25*
Date Received: *06/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.0		*	%	0.1	0.5	07/12/21 10:30	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.6		*	%	0.1	0.5	07/12/21 10:30	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/12/21 10:30	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.285		*	mmhos/cm	0.001	0.01	07/16/21 0:00	gkh
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
Temperature		1	22.0		*	C	0.1	0.1	07/16/21 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/16/21 0:00	gkh
pH		1	7.6		*	units	0.1	0.1	07/16/21 0:00	gkh
Solids, Percent	D2216-80	1	99.2		*	%	0.1	0.5	06/26/21 13:25	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.46		*	%	0.01	0.1	07/12/21 10:00	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				06/29/21 15:00	jpb
Digestion - Hot Plate	M3050B ICP-MS				*				07/09/21 15:03	mep
Digestion - Hot Plate	M3050B ICP				*				07/09/21 15:03	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/15/21 20:20	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				06/30/21 16:14	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				06/30/21 16:14	jpb
Synthetic Precip. Leaching Procedure	M1312								06/30/21 11:49	gkh/zln

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Aluminum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522455													
WG522455ICV	ICV	07/02/21 13:42	II210620-2	2		1.985	mg/L	99	90	110			
WG522455ICB	ICB	07/02/21 13:46				U	mg/L		-0.15	0.15			
WG522152PBS	PBS	07/02/21 14:10				U	mg/L		-0.15	0.15			
WG522152LFB1	LFB	07/02/21 14:14	II210622-2	1.0013		.985	mg/L	98	80	120			
L66691-02MS	MS	07/02/21 14:25	II210622-2	1.0013	.153	1.127	mg/L	97	75	125			
L66691-02MSD	MSD	07/02/21 14:29	II210622-2	1.0013	.153	1.127	mg/L	97	75	125	0	20	
L66694-17DUP	DUP	07/02/21 15:16			.063	.057	mg/L				10	20	RA
WG522458													
WG522458ICV	ICV	07/02/21 15:44	II210620-2	2		1.994	mg/L	100	90	110			
WG522458ICB	ICB	07/02/21 15:47				U	mg/L		-0.15	0.15			
WG522062PBS	PBS	07/02/21 16:12				U	mg/L		-0.15	0.15			
WG522062LFB1	LFB	07/02/21 16:16	II210622-2	1.0013		.999	mg/L	100	80	120			
L66694-02DUP	DUP	07/02/21 16:27			9.97	9.837	mg/L				1	20	
L66694-03MS	MS	07/02/21 16:35	II210622-2	1.0013	U	1.038	mg/L	104	75	125			
L66694-03MSD	MSD	07/02/21 16:39	II210622-2	1.0013	U	1.029	mg/L	103	75	125	1	20	

Aluminum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522997													
WG522997ICV	ICV	07/13/21 0:47	II210712-1	2		1.976	mg/L	99	90	110			
WG522997ICB	ICB	07/13/21 0:50				U	mg/L		-0.15	0.15			
WG522770PBS	PBS	07/13/21 1:15				U	mg/Kg		-15	15			
WG522770LCSS	LCSS	07/13/21 1:19	PCN63584	8130		8423	mg/Kg		3920	12300			
WG522770LCSSD	LCSSD	07/13/21 1:22	PCN63584	8130		8742	mg/Kg		3920	12300	4	20	
L66694-01MS	MS	07/13/21 1:30	II210708-3	101.0808	8210	10372.7	mg/Kg	2140	75	125			M3
L66694-01MSD	MSD	07/13/21 1:34	II210708-3	101.0808	8210	11039.3	mg/Kg	2799	75	125	6	20	M3

Antimony (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.0201		.02083	mg/L	104	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.0012	0.0012			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.01		.00961	mg/L	96	80	120			
L66694-02DUP	DUP	07/01/21 14:02			U	U	mg/L				0	20	RA
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.01	U	.01007	mg/L	101	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.01	U	.01002	mg/L	100	75	125	0	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.0012	0.0012			
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.0201		.02024	mg/L	101	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.0012	0.0012			
WG522152PBS	PBS	07/08/21 17:23				U	mg/L		-0.0012	0.0012			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.01		.00991	mg/L	99	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.01	U	.00992	mg/L	99	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.01	U	.01002	mg/L	100	75	125	1	20	
L66694-17DUP	DUP	07/08/21 17:54			.0009	.00089	mg/L				1	20	RA

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Antimony, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.0201		.01977	mg/L	98	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.0012	0.0012			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-0.6	0.6			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	134		96.99936	mg/Kg		4.56	264			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	134		98.45334	mg/Kg		4.56	264	1	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	5.05	.488	1.12378	mg/Kg	13	75	125			M2
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	5.05	.488	.93946	mg/Kg	9	75	125	18	20	M2

Arsenic (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.05		.05172	mg/L	103	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.0006	0.0006			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.05005		.04889	mg/L	98	80	120			
L66694-02DUP	DUP	07/01/21 14:02			.00041	.00041	mg/L				0	20	RA
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.05005	.00063	.05099	mg/L	101	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.05005	.00063	.05053	mg/L	100	75	125	1	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.0006	0.0006			
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.05		.04979	mg/L	100	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.0006	0.0006			
WG522152PBS	PBS	07/08/21 17:23				U	mg/L		-0.0006	0.0006			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.05005		.05064	mg/L	101	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.05005	.00071	.05116	mg/L	101	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.05005	.00071	.05128	mg/L	101	75	125	0	20	
L66694-17DUP	DUP	07/08/21 17:54			.00092	.00091	mg/L				1	20	RA

Arsenic, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.05		.05075	mg/L	102	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.0006	0.0006			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-0.3	0.3			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	156		151.63561	mg/Kg		129	183			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	156		159.66286	mg/Kg		129	183	5	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	25.27525	4.11	29.00311	mg/Kg	98	75	125			
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	25.27525	4.11	28.10045	mg/Kg	95	75	125	3	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Cadmium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.05		.052489	mg/L	105	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.00015	0.00015			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.05005		.047222	mg/L	94	80	120			
L66694-02DUP	DUP	07/01/21 14:02			.0189	.021471	mg/L				13	20	
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.05005	U	.048037	mg/L	96	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.05005	U	.047482	mg/L	95	75	125	1	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.00015	0.00015			
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.05		.051429	mg/L	103	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.00015	0.00015			
WG522152PBS	PBS	07/08/21 17:23				U	mg/L		-0.00015	0.00015			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.05005		.049208	mg/L	98	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.05005	.000124	.048698	mg/L	97	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.05005	.000124	.049028	mg/L	98	75	125	1	20	
L66694-17DUP	DUP	07/08/21 17:54			U	U	mg/L				0	20	RA

Cadmium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.05		.05057	mg/L	101	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.00015	0.00015			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-0.075	0.075			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	137		131.492058	mg/Kg		113	160			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	137		144.43709	mg/Kg		113	160	9	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	25.27525	1.55	24.001804	mg/Kg	89	75	125			
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	25.27525	1.55	23.159351	mg/Kg	85	75	125	4	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Calcium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522455													
WG522455ICV	ICV	07/02/21 13:42	II210620-2	100		100.3	mg/L	100	90	110			
WG522455ICB	ICB	07/02/21 13:46				U	mg/L		-0.3	0.3			
WG522152PBS	PBS	07/02/21 14:10				U	mg/L		-0.3	0.3			
WG522152LFB1	LFB	07/02/21 14:14	II210622-2	67.98753		67.69	mg/L	100	80	120			
L66691-02MS	MS	07/02/21 14:25	II210622-2	67.98753	6.79	74.37	mg/L	99	75	125			
L66691-02MSD	MSD	07/02/21 14:29	II210622-2	67.98753	6.79	74.58	mg/L	100	75	125	0	20	
L66694-17DUP	DUP	07/02/21 15:16			13.4	13.18	mg/L				2	20	
WG522458													
WG522458ICV	ICV	07/02/21 15:44	II210620-2	100		101.4	mg/L	101	90	110			
WG522458ICB	ICB	07/02/21 15:47				U	mg/L		-0.3	0.3			
WG522062PBS	PBS	07/02/21 16:12				U	mg/L		-0.3	0.3			
WG522062LFB1	LFB	07/02/21 16:16	II210622-2	67.98753		68.86	mg/L	101	80	120			
L66694-02DUP	DUP	07/02/21 16:27			390	412.2	mg/L				6	20	
L66694-03MS	MS	07/02/21 16:35	II210622-2	67.98753	18.9	86.46	mg/L	99	75	125			
L66694-03MSD	MSD	07/02/21 16:39	II210622-2	67.98753	18.9	85.4	mg/L	98	75	125	1	20	
WG522581													
WG522581ICV	ICV	07/07/21 21:04	II210620-2	100		100.1	mg/L	100	90	110			
WG522581ICB	ICB	07/07/21 21:08				U	mg/L		-0.3	0.3			
WG522062PBS	PBS	07/07/21 21:32				.14	mg/L		-0.3	0.3			
WG522062LFB1	LFB	07/07/21 21:36	II210622-2	67.98753		69.87	mg/L	103	80	120			
L66694-02DUP	DUP	07/07/21 21:44			394	424.9	mg/L				8	20	
L66694-03MS	MS	07/07/21 21:51	II210622-2	67.98753	18.4	87.84	mg/L	102	75	125			
L66694-03MSD	MSD	07/07/21 21:55	II210622-2	67.98753	18.4	88.52	mg/L	103	75	125	1	20	
WG522579													
WG522579ICV	ICV	07/07/21 22:55	II210620-2	100		100.7	mg/L	101	90	110			
WG522579ICB	ICB	07/07/21 22:58				U	mg/L		-0.3	0.3			
WG522152PBS	PBS	07/07/21 23:22				U	mg/L		-0.3	0.3			
WG522152LFB1	LFB	07/07/21 23:26	II210622-2	67.98753		68.53	mg/L	101	80	120			
L66691-02MS	MS	07/07/21 23:37	II210622-2	67.98753	6.83	75.52	mg/L	101	75	125			
L66691-02MSD	MSD	07/07/21 23:40	II210622-2	67.98753	6.83	75.23	mg/L	101	75	125	0	20	
L66694-17DUP	DUP	07/07/21 23:55			13.6	13.3	mg/L				2	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Calcium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522997													
WG522997ICV	ICV	07/13/21 0:47	II210712-1	100		99.16	mg/L	99	90	110			
WG522997ICB	ICB	07/13/21 0:50				U	mg/L		-0.3	0.3			
WG522770PBS	PBS	07/13/21 1:15				U	mg/Kg		-30	30			
WG522770LCSS	LCSS	07/13/21 1:19	PCN63584	4760		4465	mg/Kg		3890	5640			
WG522770LCSSD	LCSSD	07/13/21 1:22	PCN63584	4760		4723	mg/Kg		3890	5640	6	20	
L66694-01MS	MS	07/13/21 1:30	II210708-3	6867.73134	23700	29865.7	mg/Kg	90	75	125			
L66694-01MSD	MSD	07/13/21 1:34	II210708-3	6867.73134	23700	31138.3	mg/Kg	108	75	125	4	20	
WG523065													
WG523065ICV	ICV	07/14/21 9:48	II210712-1	100		100.4	mg/L	100	90	110			
WG523065ICB	ICB	07/14/21 9:52				U	mg/L		-0.3	0.3			
WG522770PBS	PBS	07/14/21 10:16				U	mg/Kg		-30	30			
WG522770LCSS	LCSS	07/14/21 10:20	PCN63584	4760		4626	mg/Kg		3890	5640			
WG522770LCSSD	LCSSD	07/14/21 10:24	PCN63584	4760		4860	mg/Kg		3890	5640	5	20	
L66694-01MS	MS	07/14/21 10:32	II5XSOIL	6867.01525	26200	33274.45	mg/Kg	103	75	125			
L66694-01MSD	MSD	07/14/21 10:36	II5XSOIL	6867.01525	26200	34678.35	mg/Kg	123	75	125	4	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522456													
WG522456PBS	PBS	07/12/21 8:00				U	%		-0.3	0.3			
WG522456LCSS	LCSS	07/12/21 8:07	PCN61786	4.35		4.3	%	99	80	120			
L66694-01DUP	DUP	07/12/21 8:23			.2	.2	%				0	20	RA

Carbon, total inorganic (TIC) ASA No. 9 29-2.2.4 (calc TC - TOC)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522456													
WG522456PBS	PBS	07/12/21 8:00				U	%		-0.3	0.3			
L66694-01DUP	DUP	07/12/21 8:23			U	U	%				0	20	RA

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522456													
WG522456PBS	PBS	07/12/21 8:00				U	%		-0.3	0.3			
L66694-01DUP	DUP	07/12/21 8:23			.3	.3	%				0	20	RA

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523371													
L66694-04DUP	DUP	07/16/21 7:22			.442	.421	mmhos/cm				5	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Copper (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.05		.05334	mg/L	107	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.0024	0.0024			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.05		.04881	mg/L	98	80	120			
L66694-02DUP	DUP	07/01/21 14:02			27	29.08152	mg/L				7	20	
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.05	.0894	.13654	mg/L	94	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.05	.0894	.13625	mg/L	94	75	125	0	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.0024	0.0024			
WG522388													
WG522388ICV	ICV	07/01/21 16:19	MS210630-2	.05		.05382	mg/L	108	90	110			
WG522388ICB	ICB	07/01/21 16:21				U	mg/L		-0.0024	0.0024			
WG522062PBS	PBS	07/01/21 16:30				U	mg/L		-0.0024	0.0024			
WG522062LFB2	LFB	07/01/21 16:32	MS210610-2	.05		.04818	mg/L	96	80	120			
L66694-02DUP	DUP	07/01/21 16:38			29.3	30.67866	mg/L				5	20	
L66694-04MS	MS	07/01/21 16:47	MS210610-2	.05	.084	.13243	mg/L	97	75	125			
L66694-04MSD	MSD	07/01/21 16:48	MS210610-2	.05	.084	.1315	mg/L	95	75	125	1	20	
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.05		.05172	mg/L	103	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.0024	0.0024			
WG522152PBS	PBS	07/08/21 17:23				.002	mg/L		-0.0024	0.0024			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.05		.05299	mg/L	106	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.05	.00823	.05799	mg/L	100	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.05	.00823	.0576	mg/L	99	75	125	1	20	
L66694-17DUP	DUP	07/08/21 17:54			.106	.09038	mg/L				16	20	
WG522817													
WG522817ICV	ICV	07/09/21 10:20	MS210630-2	.05		.0513	mg/L	103	90	110			
WG522817ICB	ICB	07/09/21 10:22				U	mg/L		-0.0024	0.0024			
WG522152PBS	PBS	07/09/21 10:31				.00196	mg/L		-0.0024	0.0024			
WG522152LFB2	LFB	07/09/21 10:33	MS210702-2	.05		.05085	mg/L	102	80	120			
L66691-03MS	MS	07/09/21 10:40	MS210702-2	.05	.00653	.05508	mg/L	97	75	125			
L66691-03MSD	MSD	07/09/21 10:42	MS210702-2	.05	.00653	.05491	mg/L	97	75	125	0	20	
L66694-17DUP	DUP	07/09/21 10:53			.0987	.08315	mg/L				17	20	
WG522267PBS	PBS	07/09/21 10:55				.01088	mg/L		-0.0024	0.0024			B1
WG522267LFB2	LFB	07/09/21 10:57	MS210702-2	.05		.06049	mg/L	121	80	120			N1

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Copper, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.05		.05207	mg/L	104	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.0024	0.0024			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-1.2	1.2			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	54.9		52.96988	mg/Kg		46.1	63.6			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	54.9		54.97001	mg/Kg		46.1	63.6	4	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	25.25	4470	5370.39923	mg/Kg	3566	75	125			M3
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	25.25	4470	6858.2921	mg/Kg	9459	75	125	24	20	M3 RD
WG523286													
WG523286ICV	ICV	07/15/21 12:16	MS210630-2	.05		.05175	mg/L	104	90	110			
WG523286ICB	ICB	07/15/21 12:18				.00389	mg/L		-0.0024	0.0024			BB
WG522770PBS	PBS	07/15/21 12:27				U	mg/Kg		-1.2	1.2			
WG522770LCSS	LCSS	07/15/21 12:29	PCN63584	54.9		47.53742	mg/Kg		46.1	63.6			
WG522770LCSSD	LCSSD	07/15/21 12:31	PCN63584	54.9		48.49612	mg/Kg		46.1	63.6	2	20	
L66694-15MS	MS	07/15/21 13:07	MS200XS	25.25	4320	5234.6224	mg/Kg	3622	75	125			M3
L66694-15MSD	MSD	07/15/21 13:09	MS200XS	25.25	4320	5802.2025	mg/Kg	9831	75	125	26	20	M3 RD

Iron (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522455													
WG522455ICV	ICV	07/02/21 13:42	II210620-2	2		1.993	mg/L	100	90	110			
WG522455ICB	ICB	07/02/21 13:46				U	mg/L		-0.18	0.18			
WG522152PBS	PBS	07/02/21 14:10				U	mg/L		-0.18	0.18			
WG522152LFB1	LFB	07/02/21 14:14	II210622-2	1.0018		1.02	mg/L	102	80	120			
L66691-02MS	MS	07/02/21 14:25	II210622-2	1.0018	U	1.052	mg/L	105	75	125			
L66691-02MSD	MSD	07/02/21 14:29	II210622-2	1.0018	U	1.062	mg/L	106	75	125	1	20	
L66694-17DUP	DUP	07/02/21 15:16			.227	.21	mg/L				8	20	RA
WG522458													
WG522458ICV	ICV	07/02/21 15:44	II210620-2	2		1.999	mg/L	100	90	110			
WG522458ICB	ICB	07/02/21 15:47				U	mg/L		-0.18	0.18			
WG522062PBS	PBS	07/02/21 16:12				U	mg/L		-0.18	0.18			
WG522062LFB1	LFB	07/02/21 16:16	II210622-2	1.0018		1.026	mg/L	102	80	120			
L66694-02DUP	DUP	07/02/21 16:27			1.65	1.242	mg/L				28	20	RD
L66694-03MS	MS	07/02/21 16:35	II210622-2	1.0018	.135	1.148	mg/L	101	75	125			
L66694-03MSD	MSD	07/02/21 16:39	II210622-2	1.0018	.135	1.122	mg/L	99	75	125	2	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522997													
WG522997ICV	ICV	07/13/21 0:47	II210712-1	2		1.968	mg/L	98	90	110			
WG522997ICB	ICB	07/13/21 0:50				U	mg/L		-0.18	0.18			
WG522770PBS	PBS	07/13/21 1:15				7.04	mg/Kg		-18	18			
WG522770LCSS	LCSS	07/13/21 1:19	PCN63584	14100		13760	mg/Kg		8470	19700			
WG522770LCSSD	LCSSD	07/13/21 1:22	PCN63584	14100		14300	mg/Kg		8470	19700	4	20	
L66694-01MS	MS	07/13/21 1:30	II210708-3	101.0101	98600	98485.1	mg/Kg	-114	75	125			M3
L66694-01MSD	MSD	07/13/21 1:34	II210708-3	101.0101	98600	100686.9	mg/Kg	2066	75	125	2	20	M3
WG523065													
WG523065ICV	ICV	07/14/21 9:48	II210712-1	2		1.977	mg/L	99	90	110			
WG523065ICB	ICB	07/14/21 9:52				U	mg/L		-0.18	0.18			
WG522770PBS	PBS	07/14/21 10:16				8.31	mg/Kg		-18	18			
WG522770LCSS	LCSS	07/14/21 10:20	PCN63584	14100		14410	mg/Kg		8470	19700			
WG522770LCSSD	LCSSD	07/14/21 10:24	PCN63584	14100		14810	mg/Kg		8470	19700	3	20	
L66694-01MS	MS	07/14/21 10:32	II5XSOIL	101.1717	120000	120745.5	mg/Kg	737	75	125			M3
L66694-01MSD	MSD	07/14/21 10:36	II5XSOIL	101.1717	120000	123775.5	mg/Kg	3732	75	125	2	20	M3
WG523281													
WG523281ICV	ICV	07/16/21 3:10	II210712-1	2		1.992	mg/L	100	90	110			
WG523281ICB	ICB	07/16/21 3:14				U	mg/L		-0.18	0.18			
WG522770PBS	PBS	07/16/21 3:39				6.82	mg/Kg		-18	18			
WG522770LCSS	LCSS	07/16/21 3:43	PCN63584	14100		13750	mg/Kg		8470	19700			
WG522770LCSSD	LCSSD	07/16/21 3:46	PCN63584	14100		14020	mg/Kg		8470	19700	2	20	
L66694-01MS	MS	07/16/21 3:54	II5XSOIL	101.1717	119000	117362	mg/Kg	358	75	125			M3
L66694-01MSD	MSD	07/16/21 3:58	II5XSOIL	101.1717	119000	119331.5	mg/Kg	2304	75	125	2	20	M3

Lead (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.05		.05266	mg/L	105	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.0003	0.0003			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.05005		.04782	mg/L	96	80	120			
L66694-02DUP	DUP	07/01/21 14:02			.00466	.00448	mg/L				4	20	
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.05005	.00083	.04865	mg/L	96	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.05005	.00083	.0485	mg/L	95	75	125	0	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.0003	0.0003			
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.05		.05019	mg/L	100	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.0003	0.0003			
WG522152PBS	PBS	07/08/21 17:23				.00017	mg/L		-0.0003	0.0003			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.05005		.04898	mg/L	98	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.05005	.00198	.04986	mg/L	96	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.05005	.00198	.05026	mg/L	96	75	125	1	20	
L66694-17DUP	DUP	07/08/21 17:54			.00112	.00075	mg/L				40	20	RD

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Lead, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.05		.05091	mg/L	102	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.0003	0.0003			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-0.15	0.15			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	130		125.1071	mg/Kg		107	152			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	130		130.92557	mg/Kg		107	152	5	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	25.27525	43.4	158.42807	mg/Kg	455	75	125			MC
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	25.27525	43.4	47.75073	mg/Kg	17	75	125	107	20	MC RD

Magnesium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522455													
WG522455ICV	ICV	07/02/21 13:42	II210620-2	100		97.25	mg/L	97	90	110			
WG522455ICB	ICB	07/02/21 13:46				U	mg/L		-0.6	0.6			
WG522152PBS	PBS	07/02/21 14:10				U	mg/L		-0.6	0.6			
WG522152LFB1	LFB	07/02/21 14:14	II210622-2	50.00302		47.92	mg/L	96	80	120			
L66691-02MS	MS	07/02/21 14:25	II210622-2	50.00302	.85	48.68	mg/L	96	75	125			
L66691-02MSD	MSD	07/02/21 14:29	II210622-2	50.00302	.85	48.9	mg/L	96	75	125	0	20	
L66694-17DUP	DUP	07/02/21 15:16			.59	.56	mg/L				5	20	RA
WG522458													
WG522458ICV	ICV	07/02/21 15:44	II210620-2	100		98.36	mg/L	98	90	110			
WG522458ICB	ICB	07/02/21 15:47				U	mg/L		-0.6	0.6			
WG522062PBS	PBS	07/02/21 16:12				U	mg/L		-0.6	0.6			
WG522062LFB1	LFB	07/02/21 16:16	II210622-2	50.00302		48.89	mg/L	98	80	120			
L66694-02DUP	DUP	07/02/21 16:27			18.4	18.5	mg/L				1	20	
L66694-03MS	MS	07/02/21 16:35	II210622-2	50.00302	.37	48.22	mg/L	96	75	125			
L66694-03MSD	MSD	07/02/21 16:39	II210622-2	50.00302	.37	47.58	mg/L	94	75	125	1	20	

Magnesium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522997													
WG522997ICV	ICV	07/13/21 0:47	II210712-1	100		96.49	mg/L	96	90	110			
WG522997ICB	ICB	07/13/21 0:50				U	mg/L		-0.6	0.6			
WG522770PBS	PBS	07/13/21 1:15				U	mg/Kg		-60	60			
WG522770LCSS	LCSS	07/13/21 1:19	PCN63584	2320		2214	mg/Kg		1760	2880			
WG522770LCSSD	LCSSD	07/13/21 1:22	PCN63584	2320		2296	mg/Kg		1760	2880	4	20	
L66694-01MS	MS	07/13/21 1:30	II210708-3	5050.07474	1910	6816.49	mg/Kg	97	75	125			
L66694-01MSD	MSD	07/13/21 1:34	II210708-3	5050.07474	1910	7035.66	mg/Kg	101	75	125	3	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522455													
WG522455ICV	ICV	07/02/21 13:42	II210620-2	2		1.966	mg/L	98	90	110			
WG522455ICB	ICB	07/02/21 13:46				U	mg/L		-0.03	0.03			
WG522152PBS	PBS	07/02/21 14:10				U	mg/L		-0.03	0.03			
WG522152LFB1	LFB	07/02/21 14:14	II210622-2	.5005		.48	mg/L	96	80	120			
L66691-02MS	MS	07/02/21 14:25	II210622-2	.5005	.097	.57	mg/L	95	75	125			
L66691-02MSD	MSD	07/02/21 14:29	II210622-2	.5005	.097	.574	mg/L	95	75	125	1	20	
L66694-17DUP	DUP	07/02/21 15:16			.017	.016	mg/L				6	20	RA
WG522458													
WG522458ICV	ICV	07/02/21 15:44	II210620-2	2		1.971	mg/L	99	90	110			
WG522458ICB	ICB	07/02/21 15:47				U	mg/L		-0.03	0.03			
WG522062PBS	PBS	07/02/21 16:12				U	mg/L		-0.03	0.03			
WG522062LFB1	LFB	07/02/21 16:16	II210622-2	.5005		.482	mg/L	96	80	120			
L66694-02DUP	DUP	07/02/21 16:27			3.57	3.926	mg/L				9	20	
L66694-03MS	MS	07/02/21 16:35	II210622-2	.5005	U	.484	mg/L	97	75	125			
L66694-03MSD	MSD	07/02/21 16:39	II210622-2	.5005	U	.477	mg/L	95	75	125	1	20	

Manganese, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522997													
WG522997ICV	ICV	07/13/21 0:47	II210712-1	2		1.943	mg/L	97	90	110			
WG522997ICB	ICB	07/13/21 0:50				U	mg/L		-0.03	0.03			
WG522770PBS	PBS	07/13/21 1:15				U	mg/Kg		-3	3			
WG522770LCSS	LCSS	07/13/21 1:19	PCN63584	269		257.9	mg/Kg		221	317			
WG522770LCSSD	LCSSD	07/13/21 1:22	PCN63584	269		254.5	mg/Kg		221	317	1	20	
L66694-01MS	MS	07/13/21 1:30	II210708-3	50.5505	819	841.229	mg/Kg	44	75	125			M3
L66694-01MSD	MSD	07/13/21 1:34	II210708-3	50.5505	819	887.285	mg/Kg	135	75	125	5	20	M3

Mercury (1312) M7470A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522259													
WG522259ICV	ICV	07/02/21 13:17	HG210701-3	.00501		.005	mg/L	100	95	105			
WG522259ICB	ICB	07/02/21 13:18				U	mg/L		-0.0002	0.0002			
WG522380													
WG522380LFB	LFB	07/02/21 15:01	HG210701-6	.002002		.00189	mg/L	94	85	115			
WG522062PBS	PBS	07/02/21 15:02				U	mg/L		-0.0006	0.0006			
WG522062LFB1	LFB	07/02/21 15:03	HG210701-6	.002002		.00209	mg/L	104	85	115			
L66694-02DUP	DUP	07/02/21 15:06			U	U	mg/L				0	20	RA
L66694-03MS	MS	07/02/21 15:07	HG210701-6	.002002	U	.002	mg/L	100	85	115			
L66694-03MSD	MSD	07/02/21 15:08	HG210701-6	.002002	U	.00212	mg/L	106	85	115	6	20	
WG522152LFB1	LFB	07/02/21 15:18	HG210701-6	.002002		.00203	mg/L	101	85	115			
WG522152PBS	PBS	07/02/21 15:19				U	mg/L		-0.0006	0.0006			
L66694-17DUP	DUP	07/02/21 16:32			U	U	mg/L				0	20	RA
L66691-02MS	MS	07/02/21 16:34	HG210701-6	.002002	.0127	.01485	mg/L	107	85	115			
L66691-02MSD	MSD	07/02/21 16:35	HG210701-6	.002002	.0127	.01445	mg/L	87	85	115	3	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Mercury by Direct Combustion AA M7473 CVAAS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG520390													
WG520390ICV4	ICV	06/04/21 12:43	HG210603-2	10000		10200	ng/g	102	90	110			
WG522070													
WG522070ICV1	ICV	06/28/21 8:52	HG210603-4	100		93.2	ng/g	93	90	110			
WG522070ICV2	ICV	06/28/21 8:59	HG210603-4	100		100	ng/g	100	90	110			
WG522070ICV3	ICV	06/28/21 9:06	HG210603-3	1000		937	ng/g	94	90	110			
WG522070ICV4	ICV	06/28/21 9:13	HG210603-2	10000		10200	ng/g	102	90	110			
WG522070PBS	PBS	06/28/21 15:05				U	ng/g		-4.41	4.41			
WG522070LCSS	LCSS	06/28/21 15:14	PCN60050	90		78.6	ng/g		80	120			
WG522070LCSSD	LCSSD	06/28/21 15:23	PCN60050	90		78.3	ng/g		80	120	0	20	
L66347-03MS	MS	06/28/21 15:40	HG210603-3				ng/g	85	80	120			
L66347-04DUP	DUP	06/28/21 15:58			38.5	38.5	ng/g				0	20	
WG522102													
WG522102ICV1	ICV	06/30/21 10:37	HG210603-4	100		109	ng/g	109	90	110			
WG522102ICV2	ICV	06/30/21 10:44	HG210603-4	100		102	ng/g	102	90	110			
WG522102ICV3	ICV	06/30/21 10:51	HG210603-3	1000		1010	ng/g	101	90	110			
WG522102ICV4	ICV	06/30/21 10:58	HG210603-2	10000		10100	ng/g	101	90	110			
WG522102PBS	PBS	06/30/21 12:18				2.98	ng/g		-4.95	4.95			
WG522102LCSS	LCSS	06/30/21 12:27	PCN60050	90		85.8	ng/g		80	120			
WG522102LCSSD	LCSSD	06/30/21 12:36	PCN60050	90		86.8	ng/g		80	120	1	20	
L66691-03MS	MS	06/30/21 12:53	HG210603-3				ng/g	89	80	120			
L66691-04DUP	DUP	06/30/21 13:11			3.36	3.84	ng/g				13	20	RA

Molybdenum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522455													
WG522455ICV	ICV	07/02/21 13:42	II210620-2	2		2.035	mg/L	102	90	110			
WG522455ICB	ICB	07/02/21 13:46				U	mg/L		-0.06	0.06			
WG522152PBS	PBS	07/02/21 14:10				U	mg/L		-0.06	0.06			
WG522152LFB1	LFB	07/02/21 14:14	II210622-2	.501		.488	mg/L	97	80	120			
L66691-02MS	MS	07/02/21 14:25	II210622-2	.501	U	.485	mg/L	97	75	125			
L66691-02MSD	MSD	07/02/21 14:29	II210622-2	.501	U	.494	mg/L	99	75	125	2	20	
L66694-17DUP	DUP	07/02/21 15:16			.032	.039	mg/L				20	20	RA
WG522458													
WG522458ICV	ICV	07/02/21 15:44	II210620-2	2		2.028	mg/L	101	90	110			
WG522458ICB	ICB	07/02/21 15:47				U	mg/L		-0.06	0.06			
WG522062PBS	PBS	07/02/21 16:12				U	mg/L		-0.06	0.06			
WG522062LFB1	LFB	07/02/21 16:16	II210622-2	.501		.493	mg/L	98	80	120			
L66694-02DUP	DUP	07/02/21 16:27			U	U	mg/L				0	20	RA
L66694-03MS	MS	07/02/21 16:35	II210622-2	.501	U	.49	mg/L	98	75	125			
L66694-03MSD	MSD	07/02/21 16:39	II210622-2	.501	U	.492	mg/L	98	75	125	0	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522997													
WG522997ICV	ICV	07/13/21 0:47	II210712-1	2		1.998	mg/L	100	90	110			
WG522997ICB	ICB	07/13/21 0:50				U	mg/L		-0.06	0.06			
WG522770PBS	PBS	07/13/21 1:15				U	mg/Kg		-6	6			
WG522770LCSS	LCSS	07/13/21 1:19	PCN63584	95.4		90.07	mg/Kg		76.4	114			
WG522770LCSSD	LCSSD	07/13/21 1:22	PCN63584	95.4		95.64	mg/Kg		76.4	114	6	20	
L66694-01MS	MS	07/13/21 1:30	II210708-3	50.601	91.7	105.242	mg/Kg	27	75	125			M2
L66694-01MSD	MSD	07/13/21 1:34	II210708-3	50.601	91.7	117.463	mg/Kg	51	75	125	11	20	M2

Nickel (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.05		.05298	mg/L	106	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.0012	0.0012			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.05		.04766	mg/L	95	80	120			
L66694-02DUP	DUP	07/01/21 14:02			.0148	.0158	mg/L				7	20	
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.05	U	.04858	mg/L	97	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.05	U	.04824	mg/L	96	75	125	1	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.0012	0.0012			
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.05		.05089	mg/L	102	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.0012	0.0012			
WG522152PBS	PBS	07/08/21 17:23				U	mg/L		-0.0012	0.0012			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.05		.05056	mg/L	101	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.05	.00045	.05029	mg/L	100	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.05	.00045	.05063	mg/L	100	75	125	1	20	
L66694-17DUP	DUP	07/08/21 17:54			U	U	mg/L				0	20	RA

Nickel, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.05		.05149	mg/L	103	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.0012	0.0012			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-0.6	0.6			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	53.9		52.43161	mg/Kg		44.5	63.3			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	53.9		57.45993	mg/Kg		44.5	63.3	9	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	25.25	7.21	30.54355	mg/Kg	92	75	125			
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	25.25	7.21	31.28494	mg/Kg	95	75	125	2	20	

pH, Saturated Paste EPA 600/2-78-054 section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523371													
WG523371ICV	ICV	07/16/21 6:57	PCN63115	4.01		4	units	100	3.9	4.1			
L66694-04DUP	DUP	07/16/21 7:22			7.3	7.37	units				1	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.05		.05152	mg/L	103	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.0003	0.0003			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.05		.04845	mg/L	97	80	120			
L66694-02DUP	DUP	07/01/21 14:02			.00685	.00725	mg/L				6	20	
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.05	.00123	.05143	mg/L	100	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.05	.00123	.05051	mg/L	99	75	125	2	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.0003	0.0003			
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.05		.05048	mg/L	101	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.0003	0.0003			
WG522152PBS	PBS	07/08/21 17:23				U	mg/L		-0.0003	0.0003			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.05		.05054	mg/L	101	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.05	U	.05081	mg/L	102	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.05	U	.05118	mg/L	102	75	125	1	20	
L66694-17DUP	DUP	07/08/21 17:54			.00134	.00148	mg/L				10	20	
WG522817													
WG522817ICV	ICV	07/09/21 10:20	MS210630-2	.05		.04993	mg/L	100	90	110			
WG522817ICB	ICB	07/09/21 10:22				U	mg/L		-0.0003	0.0003			
WG522152PBS	PBS	07/09/21 10:31				U	mg/L		-0.0003	0.0003			
WG522152LFB2	LFB	07/09/21 10:33	MS210702-2	.05		.04837	mg/L	97	80	120			
L66691-03MS	MS	07/09/21 10:40	MS210702-2	.05	U	.04941	mg/L	99	75	125			
L66691-03MSD	MSD	07/09/21 10:42	MS210702-2	.05	U	.04957	mg/L	99	75	125	0	20	
L66694-17DUP	DUP	07/09/21 10:53			.00134	.00141	mg/L				5	20	
WG522267PBS	PBS	07/09/21 10:55				U	mg/L		-0.0003	0.0003			
WG522267LFB2	LFB	07/09/21 10:57	MS210702-2	.05		.04847	mg/L	97	80	120			

Selenium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.05		.05077	mg/L	102	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.0003	0.0003			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-0.15	0.15			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	167		169.5095	mg/Kg		132	201			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	167		175.94985	mg/Kg		132	201	4	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	12.625	4.06	14.61197	mg/Kg	84	75	125			
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	12.625	4.06	15.82004	mg/Kg	93	75	125	8	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG521953													
WG521953PBS	PBS	06/25/21 12:40				U	%		-0.1	0.1			
L66694-01DUP	DUP	06/25/21 15:25			99.3	99.3	%				0	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sulfur, total ASTM D-4239-85C, LECO Furnace

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522444													
WG522444PBS	PBS	07/12/21 8:00				U	%		-0.03	0.03			
WG522444LCSS	LCSS	07/12/21 8:06	PCN61786	4.01		3.39	%	85	80	120			
L66694-01MS	MS	07/12/21 8:18	PCN62544	1.3	1.93	3.31	%	106	80	120			
L66694-01DUP	DUP	07/12/21 8:24			1.93	1.92	%				1	20	

Thallium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522337													
WG522337ICV	ICV	07/01/21 13:43	MS210630-2	.05		.05337	mg/L	107	90	110			
WG522337ICB	ICB	07/01/21 13:45				U	mg/L		-0.0003	0.0003			
WG522062LFB2	LFB	07/01/21 13:56	MS210610-2	.05		.04725	mg/L	95	80	120			
L66694-02DUP	DUP	07/01/21 14:02			U	U	mg/L				0	20	RA
L66694-04MS	MS	07/01/21 14:11	MS210610-2	.05	U	.04748	mg/L	95	75	125			
L66694-04MSD	MSD	07/01/21 14:13	MS210610-2	.05	U	.04728	mg/L	95	75	125	0	20	
WG522062PBS	PBS	07/01/21 14:14				U	mg/L		-0.0003	0.0003			
WG522771													
WG522771ICV	ICV	07/08/21 17:12	MS210630-2	.05		.0519	mg/L	104	90	110			
WG522771ICB	ICB	07/08/21 17:14				U	mg/L		-0.0003	0.0003			
WG522152PBS	PBS	07/08/21 17:23				U	mg/L		-0.0003	0.0003			
WG522152LFB2	LFB	07/08/21 17:25	MS210702-2	.05		.04912	mg/L	98	80	120			
L66691-03MS	MS	07/08/21 17:32	MS210702-2	.05	U	.04871	mg/L	97	75	125			
L66691-03MSD	MSD	07/08/21 17:34	MS210702-2	.05	U	.04912	mg/L	98	75	125	1	20	
L66694-17DUP	DUP	07/08/21 17:54			U	U	mg/L				0	20	RA

Thallium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523225													
WG523225ICV	ICV	07/14/21 17:37	MS210630-2	.05		.05257	mg/L	105	90	110			
WG523225ICB	ICB	07/14/21 17:39				U	mg/L		-0.0003	0.0003			
WG522770PBS	PBS	07/14/21 17:48				U	mg/Kg		-0.15	0.15			
WG522770LCSS	LCSS	07/14/21 17:50	PCN63584	112		111.16898	mg/Kg		90.3	133			
WG522770LCSSD	LCSSD	07/14/21 17:52	PCN63584	112		118.23141	mg/Kg		90.3	133	6	20	
L66694-15MS	MS	07/14/21 18:31	MS210521-6	25.25	.0724	25.10657	mg/Kg	99	75	125			
L66694-15MSD	MSD	07/14/21 18:33	MS210521-6	25.25	.0724	25.35941	mg/Kg	100	75	125	1	20	

Hudbay Minerals

ACZ Project ID: ***L66694***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Zinc (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522455													
WG522455ICV	ICV	07/02/21 13:42	II210620-2	2		1.996	mg/L	100	90	110			
WG522455ICB	ICB	07/02/21 13:46				U	mg/L		-0.06	0.06			
WG522152PBS	PBS	07/02/21 14:10				U	mg/L		-0.06	0.06			
WG522152LFB1	LFB	07/02/21 14:14	II210622-2	.50075		.492	mg/L	98	80	120			
L66691-02MS	MS	07/02/21 14:25	II210622-2	.50075	1.43	1.893	mg/L	92	75	125			
L66691-02MSD	MSD	07/02/21 14:29	II210622-2	.50075	1.43	1.9	mg/L	94	75	125	0	20	
L66694-17DUP	DUP	07/02/21 15:16			U	U	mg/L				0	20	RA
WG522458													
WG522458ICV	ICV	07/02/21 15:44	II210620-2	2		1.996	mg/L	100	90	110			
WG522458ICB	ICB	07/02/21 15:47				U	mg/L		-0.06	0.06			
WG522062PBS	PBS	07/02/21 16:12				U	mg/L		-0.06	0.06			
WG522062LFB1	LFB	07/02/21 16:16	II210622-2	.50075		.495	mg/L	99	80	120			
L66694-02DUP	DUP	07/02/21 16:27			2.24	2.419	mg/L				8	20	
L66694-03MS	MS	07/02/21 16:35	II210622-2	.50075	U	.484	mg/L	97	75	125			
L66694-03MSD	MSD	07/02/21 16:39	II210622-2	.50075	U	.482	mg/L	96	75	125	0	20	

Zinc, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG522997													
WG522997ICV	ICV	07/13/21 0:47	II210712-1	2		1.946	mg/L	97	90	110			
WG522997ICB	ICB	07/13/21 0:50				U	mg/L		-0.06	0.06			
WG522770PBS	PBS	07/13/21 1:15				U	mg/Kg		-6	6			
WG522770LCSS	LCSS	07/13/21 1:19	PCN63584	158		146.2	mg/Kg		128	188			
WG522770LCSSD	LCSSD	07/13/21 1:22	PCN63584	158		151.6	mg/Kg		128	188	4	20	
L66694-01MS	MS	07/13/21 1:30	II210708-3	50.54545	116	152.611	mg/Kg	72	75	125			MA
L66694-01MSD	MSD	07/13/21 1:34	II210708-3	50.54545	116	157.358	mg/Kg	82	75	125	3	20	

Hudbay Minerals ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-01	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523065	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Hudbay Minerals ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-02	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523065	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

Hudbay Minerals

ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Hudbay Minerals ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-03	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG522997	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-04	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523065	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-05	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG522997	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-06	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG522997	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-07	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523225	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-08	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG522997	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Hudbay Minerals ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-09	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-10	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522458	Iron (1312)	M6010D ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522458	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522337	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Hudbay Minerals ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-11	WG522455	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522455	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522817	Selenium (1312)	M6020B ICP-MS	D1	Sample required dilution due to matrix.
			M6020B ICP-MS	D2	Sample required dilution. Target analyte exceeded calibration range.
	WG522771	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-12	WG522455	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522455	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-13	WG522455	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG522771	Copper (1312)	M6020B ICP-MS	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522070	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG522455	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-14	WG522455	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG522771	Copper (1312)	M6020B ICP-MS	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522102	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-15	WG522455	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG522771	Copper (1312)	M6020B ICP-MS	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522102	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-16	WG522455	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG522771	Copper (1312)	M6020B ICP-MS	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522102	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66694-17	WG522455	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523225	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522456	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG522771	Copper (1312)	M6020B ICP-MS	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG523286	Copper, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523281	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523225	Lead, total (3050)	M6020B ICP-MS	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG522455	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data

Hudbay Minerals ACZ Project ID: ***L66694***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522380	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522102	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Molybdenum, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG522771	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522455	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522997	Zinc, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Metals Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Selenium (1312)	M6020B ICP-MS
Selenium, total (3050)	M6020B ICP-MS

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Conductivity @25C	SM2510B
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Conductivity @25C	SM2510B
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID: L66694
Date Received: 06/23/2021 15:36
Received By:
Date Printed: 6/24/2021

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA35316	23.1	NA	15	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID: L66694
Date Received: 06/23/2021 15:36
Received By:
Date Printed: 6/24/2021

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 66694

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Holly Beggy
Company: Hudbay Minerals
E-mail: holly.beggy@hudbayminerals.com
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-343-5174

Copy of Report to:

Name: David Krizek
Company: david.krizek@hudbayminerals.com
E-mail: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3527

Invoice to:

Name: Lionelyn Garcia
Company: Hudbay Minerals
E-mail: rosemontinvoices@hudbayminerals.com
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Corey Arcuri **Sampler's Site Information** State AZ Zip code 85629 Time Zone AZ

***Sampler's Signature:** [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: 2021-SOILS
PO#:
Reporting state for compliance testing: No
Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Drainage-1 (Under Plant)	Drainage 1-2-3-4	Ina Road WWTP-Soil	Plant Tissue				
D4a-S1	6/3/21 : 7:26am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-S2	6/3/21 : 7:05am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-1	6/2/21 : 1:55pm	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-2	6/2/21 : 1:25pm	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-3	6/2/21 : 12:49pm	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-4	6/2/21 : 12:12pm	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-5	6/2/21 : 11:31am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-6	6/2/21 : 10:46am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4a-7	6/2/21 : 10:01am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Samples have been sieved to 4mm with a #5 sieve.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Corey Arcuri [signature]	6/4/21 : 12:05	Holly Beggy [signature]	6/4/21 : 12:05
Holly Beggy [signature]	6/22/21, 2:40p		6/23/21 15:36

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L66694 Chain of Custod

ACZ Laboratories, Inc. L 66694

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Holly Beggy
Company: Hudbay Minerals
E-mail: holly.beggy@hudbayminerals.com
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-343-5174

Copy of Report to:

Name: David Krizek
Company: david.krizek@hudbayminerals.com
E-mail: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3527

Invoice to:

Name: Lionelyn Garcia
Company: Hudbay Minerals
E-mail: rosemontinvoices@hudbayminerals.c
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Corey Ascuer **Sampler's Site Information** State AZ Zip code 85629 Time Zone AZ

***Sampler's Signature:** [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: 2021-SOILS
PO#:
Reporting state for compliance testing: No
Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Drainage-1 (Under Plant)	Drainage 1-2-3-4	Ina Road WWTP-Soil	Plant Tissue				
D4b-S1	6/3/21 : 8:09am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4b-S2	6/3/21 : 8:41am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4b-1	6/3/21 : 11:59am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4b-2	6/3/21 : 11:29am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4b-3	6/3/21 : 10:59am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4b-4	6/3/21 : 10:26am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4b-5	6/3/21 : 9:55am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D4b-6	6/3/21 : 9:25am	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Samples have been sieved to 4mm with a #5 sieve.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Corey Ascuer	6/4/21 = 12:05	Holly Beggy	6/4/21 : 12:05
Holly Beggy	6/21/21, 2:49pm		6/23/21 15:30

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

Holly Beggy
Hudbay Minerals
5255 E Williams Circle Suite W1065
Tucson, AZ 85711

6/17/2021

Quote Number: DRAINAGE-2-3-4

Matrix: Soil

Drainages 2, 3 & 4: 96 samples: SPLP, TIC, TS, 3050 Metals, Paste PH & EC

Parameter	Method	Detection Limit	Cost/Sample
Diskette/QC Summary			
Quality Control Summary			$0.00
Inorganic Prep			
Total Hot Plate Digestion	M3010A ICP		$0.00
Total Hot Plate Digestion	M3010A ICP-MS		$0.00
Metals Analysis			
Aluminum (1312)	M6010D ICP	0.05 mg/L	$7.50
Aluminum, total (3050)	M6010D ICP	5 mg/Kg	$7.50
Antimony (1312)	M6020B ICP-MS	0.0004 mg/L	$12.00
Antimony, total (3050)	M6020B ICP-MS	0.2 mg/Kg	$12.00
Arsenic (1312)	M6020B ICP-MS	0.0002 mg/L	$12.00
Arsenic, total (3050)	M6020B ICP-MS	0.1 mg/Kg	$12.00
Cadmium (1312)	M6020B ICP-MS	0.00005 mg/L	$12.00
Cadmium, total (3050)	M6020B ICP-MS	0.025 mg/Kg	$12.00
Calcium (1312)	M6010D ICP	0.1 mg/L	$7.50
Calcium, total (3050)	M6010D ICP	10 mg/Kg	$7.50
Copper (1312)	M6020B ICP-MS	0.0008 mg/L	$12.00
Copper, total (3050)	M6020B ICP-MS	0.4 mg/Kg	$12.00
Iron (1312)	M6010D ICP	0.06 mg/L	$7.50
Iron, total (3050)	M6010D ICP	6 mg/Kg	$7.50
Lead (1312)	M6020B ICP-MS	0.0001 mg/L	$12.00
Lead, total (3050)	M6020B ICP-MS	0.05 mg/Kg	$12.00
Magnesium (1312)	M6010D ICP	0.2 mg/L	$7.50
Magnesium, total (3050)	M6010D ICP	20 mg/Kg	$7.50
Manganese (1312)	M6010D ICP	0.01 mg/L	$7.50
Manganese, total (3050)	M6010D ICP	1 mg/Kg	$7.50
Mercury (1312)	M7470A CVAA	0.0002 mg/L	$20.00
Mercury by Direct Combustion AA	M7473 CVAAS	2 ng/g	$19.50
Molybdenum (1312)	M6010D ICP	0.02 mg/L	$7.50
Molybdenum, total (3050)	M6010D ICP	2 mg/Kg	$7.50
Nickel (1312)	M6020B ICP-MS	0.0004 mg/L	$12.00
Nickel, total (3050)	M6020B ICP-MS	0.2 mg/Kg	$12.00
Selenium (1312)	M6020B ICP-MS	0.0001 mg/L	$12.00
Selenium, total (3050)	M6020B ICP-MS	0.05 mg/Kg	$12.00
Thallium (1312)	M6020B ICP-MS	0.0001 mg/L	$12.00

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

Holly Beggy
Hudbay Minerals
5255 E Williams Circle Suite W1065
Tucson, AZ 85711

6/17/2021

Thallium, total (3050)	M6020B ICP-MS	0.05 mg/Kg	$12.00
Zinc (1312)	M6010D ICP	0.02 mg/L	$7.50
Zinc, total (3050)	M6010D ICP	2 mg/Kg	$7.50
Misc.			
Electronic Data Deliverable			$0.00
Sample Preparation			
Air Dry at 34 Degrees C	USDA No. 1, 1972		$6.25
Digestion - Hot Plate	M3050B ICP		$12.75
Digestion - Hot Plate	M3050B ICP-MS		$0.00
Saturated Paste Extraction	USDA No. 60 (2)		$13.00
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2		$9.25
Synthetic Precip. Leaching Procedure	M1312		$58.00
Soil Analysis			
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.1 %	$14.00
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	0.1 %	$0.00
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.1 %	$22.00
Conductivity @25C	SM2510B	0.001 mmhos/cm	$6.25
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2	0.1 units	$6.25
Solids, Percent	D2216-80	0.1 %	$6.25
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.01 %	$14.00
		Cost/Sample:	**$504.50**

This quote is based on a Standard Turn Around Time of approximately 21 days for soil and solid matrices (15 business days). TAT may vary with seasonal heavy workload. Please contact your PM if rush TAT is required. Rush TAT needs to be pre-approved prior to sample shipment to assure that due dates can be met. Pricing includes standard reporting formats and standard ACZ EDDs. All projects received are subject to a $150.00 Minimum Charge. Please note that method detection limits are estimates and may be elevated depending on sample matrix that require dilution. Pricing includes coolers, soil jars or bags, labels, COCs and ice-packs (if needed for your analysis), shipped to your site or office via UPS ground. Return shipping is the responsibility of the client. Please allow ample time for your bottles to arrive. Please note that soil preparation charges may change based on the condition and volume of sample(s) upon receipt. Wet samples may increase the TAT if air-drying is needed required.

REPAD.09.06.05.01

S/ tjv D/ 21 P/